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By G. C. Dorling, F.R.C.S.

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The usual course of abdominal actinomycosis is well known. The patient is admitted to hospital with acute appendicitis, often with peritonitis, and an operation is performed for removal of the appendix and drainage. Discharge continues from the incision for weeks and months, and not infrequently secondary operations have to be performed for collections of pus in the pelvis, subphrenic spaces or other parts of the abdominal cavity. The disease spreads along connective-tissue planes so that the soft tissues of the abdominal wall may be progressively ulcerated, leaving the ilium bare in the wound, or by adhesion to other viscera, such as the bladder, causing a fistula. A typical actinomycotic abscess often develops in the liver, and when this happens death is almost certain. At some time during this period actinomycosis may be recognised from an examination of the discharge.

Many methods of treatment are tried. Cope (1938) mentions potassium iodide (which has a definite effect in cattle), iodine in milk, Collosol Iodine and intravenous sodium iodide, Iodipin, copper sulphate, Yatren, formalin, Salvarsan, X rays, radium, vaccines and extract of lymph-glands, in addition to constitutional and surgical treatment. Thymol has been recommended by Myers (1937), and by Bancroft and Stanley Brown (1938). It is clear that no specific has been discovered, and this has led to a further search for a drug that would be of value. There have been a certain number of reported cases treated by chemotherapy.

The first reference to chemotherapy in actinomycosis was made by the late Dr. E. P. Poulton at a meeting of the Royal Society of Medicine in October, 1937. He pointed out that there were cases of hæmolytic streptococcal infection associated with other diseases—an unexpected occurrence—and discussed a patient who had abdominal actinomycosis and ran a continuous fever for a considerable period. Deep X rays were tolerated badly and only small amounts of iodine could be taken. The antistreptolysin titre was high. On sulphanilamide the temperature came down in five days. The patient put on weight, was discharged to Carshalton and had had no temperature since.

In 1939 Miller and Fell reported a case of abdominal actinomycosis in a boy of eleven admitted to hospital in October, 1937, with a mass in the lower abdomen which later discharged from the umbilicus and from sinuses in both iliac fossæ. Actinomycosis was found in the granules. All the well-known methods of treatment were used, including thymol and potassium iodide and X-ray therapy, but by January, 1938, his temperature was ranging between 101° and 102° F., he had lost a lot of weight, the abscess in the lower part of the abdomen had become larger and extended towards the right, where a new sinus had opened, and a fatal termination seemed almost certain. Sulphanilamide gr. 10 t.d.s. was begun on Jan. 18, in addition to the other drugs, and within a week improvement was observed. The mass in the abdomen gradually became smaller and softer and the amount of discharge diminished. The boy's appetite returned, he began to gain weight and his general appearance rapidly improved. When he was discharged to outpatients on March 22 he had gained 10 lb. By Oct. 1 all wounds had entirely healed, and on Nov. 16, 1938, he was in robust health.

Oliver Walker (1938) of Liverpool reported a case of actinomycosis following the removal of a gangrenous appendix, six months after which there was a mass filling the right iliac fossa and a persistent sinus discharging profusely, with sulphur granules showing typical filaments of actinomycosis microscopically. No improvement followed potassium iodide or Lugol's iodine. From March 4 to 10, 1938, inclusive, 1 g. of sulphanilamide was given thrice daily by mouth and this treatment was rapidly followed by lessening of the purulent discharge and disappearance of the sulphur granules. The course was repeated on March 20 for a further five days. On the 29th there had been no discharge for four days and the sinus had closed. On May 12 the abdominal wound was firmly healed, the mass in the right iliac fossa had entirely disappeared, the abdominal discomfort had vanished and the general health was greatly improved.

Sudler and Johnson (1939) of Kansas reported in August, 1939, two cases of typical (microscopically proved) actinomycosis of the cervico-facial type both dramatically cured after sulphanilamide. Jorge, Browne and Mealla (1938) of Buenos Aires reported two further cases of cervico-facial actinomycosis which responded well to sulphanilamide.

Ogilvie (1940) has recently reported a case of abdominal actinomycosis which has apparently recovered after treatment with sulphapyridine. He suggests that the sulphapyridine by eliminating the secondary streptococcus allowed the patient to effect her own cure of the actinomycotic infection.

CASE-RECORDS

The first of our cases was treated early in 1939, not without some scepticism on the part of one of us (N. L. E.) but in view of the striking benefit in this case chemotherapy has since been instituted whenever actinomycosis has been suspected.

Case 1.—Male, aged 8. Admitted to Lewisham Hospital on Jan. 21, 1939, as a case of acute appendicitis with a 3-day history of pain, diarrhœa and vomiting, and a temperature of 103° F. The abdomen was much distended, resistant to the touch and slightly tender on the left in the region of the spleen. A boggy swelling could be felt per rectum. Peritonitis probably appendicular in origin was diagnosed, but the child was considered too ill to stand operation. Since pneumococcal or streptococcal peritonitis could not be excluded a course of M. & B. 693 was given, starting with one tablet 4-hourly for 6 days, followed by one tablet 8-hourly for 9 days. Total 31½ g. The temperature came down to 100° F. at first, but later rose again, and in the third week was in the neighbourhood of 102° F. The abdominal distension gradually lessened, and localised masses could be felt, particularly in the lower abdomen, and a rounded swelling was felt per rectum.

On Feb. 11 operation was performed for drainage of the collection in the pelvis and the right iliac fossa, but no attempt was made to remove the appendix. Discharge was free from both incisions, but later became less in amount and rather thicker. Actinomycosis suspected but culture grew *Bacillus coli* only. On March 10 the pus contained a gram-positive branching streptothrix, and on the 27th anaerobic cultures yielded a good growth of *Actinomycosis bovis* after 21 days. Aerobic cultures grew coliforms, non-hæmolytic streptococci and *Staphylococcus albus*. At this time the boy was given pot. iod. gr. 10, t.d.s. for two weeks and tinct. iodi ℥5 in milk, with no improvement. The temperature still rose to 101° or 102° F. each evening, and profuse discharge continued from the wound.

Beginning on April 10 two tablets of sulphanilamide were given 8-hourly for 6 days followed by one tablet 8-hourly for 10 days. Total 33 g. By the 15th there was great improvement. The discharge was much less, dressing being now necessary only once instead of six times a day. The mass in the abdomen appeared to get smaller and the boy began to gain weight. By the end of the second course of sulphanilamide the wound was dry, but the abdominal mass still persisted, though it was much smaller. A third course was therefore given three weeks later.

On July 12 the boy was referred to Lambeth Hospital for deep X rays, to consolidate the cure, since there was still a little induration above the inguinal ligament on each side and in the recto-vesical fossa. A total dose of 2000 r units was given in 24 days.

On Jan 5, 1940, he returned to Lewisham with a mild attack of abdominal pain, fever and a small lump in the right iliac fossa; the symptoms subsided with prontosil.

On Feb. 26 he returned to have his appendix removed. No adhesions were found in the abdomen though the appendix

was scarred and bent sharply in the middle, showing that it had almost certainly been the original focus of disease. The peritoneal cavity appeared normal in every respect. Pathological report on appendix was chronic fibrosis; no actinomycosis discovered.

This boy was very ill, on the danger list for many weeks, and the disease was steadily progressing in spite of treatment when sulphanilamide was given. The improvement was immediate, and we feel certain his cure was due to chemotherapy. Because this was our first case X rays were given as well but not until he was almost well. The cure was confirmed at the subsequent operation.

CASE 2.—Male, aged 16. Admitted to Lewisham Hospital on Nov. 13, 1939, with a 3-day history of abdominal pain. He had a history of similar attacks at 3 or 4 monthly intervals for 2 years. A mass could be felt in the right side of the abdomen and conservative treatment was decided on. The temperature varied between 100° and 103° F., and since the mass appeared to be getting bigger, the abdomen was opened on Nov. 18. A mass of adhesions was found shutting off the general peritoneal cavity, and a large abscess cavity was opened, extending down into the pelvis and up into the left iliac fossa. A perforated appendix was removed, and a split rubber drain inserted. By the 24th actinomycosis was suspected owing to the persistence of a mass extending right across the lower abdomen, and well up into the left iliac fossa, continued induration in the rectum, persistent pyrexia and thin foul-smelling pus from the wound. A course of M. & B. 693 was therefore begun, 2 tablets being given thrice daily for 8 days; total 24 g. The temperature fell within 12 hours and remained below 99° F. for 5 days, but it rose to 100° F. for the next 2 days, and mounted again when the drug was stopped.

On the 28th the white-cell count was 21,000, polymorphs 88%. A film of the pus from the wound showed gram-positive filaments, anaerobic cultures yielded a moderate growth of *A. bovis*. Aerobic cultures grew *Strep. fæcalis*, *Staphylococcus* and *B. coli*. A blood-transfusion was given on Jan. 14. On Jan. 28 the urine was loaded with pus and contained *Strep. fæcalis*, implying rupture of the abscess into the bladder. The temperature fell rapidly after the rupture of the abscess but a further course of M. & B. 693 was begun on Feb. 5, two tablets being given 4-hourly for 3 days, with M. & B. soluble 3 c.cm. four times a day for 2 days. The temperature gradually subsided during the following eight weeks. By March 4 no streptothrix could be grown from the pus, and by the 26th the wound had almost healed and the boy's general condition had much improved. On April 10 there was still some pus and *Strep. fæcalis* in urine. At the end of May there was still some induration in the left iliac fossa, but he was fit for work. By the end of July he was quite well apart from an incisional hernia.

This was a typical case of severe abdominal actinomycosis with emaciation, masses in the lower abdomen, profuse discharge and a high swinging temperature. The nursing staff were convinced that he was going to die because of the rapid deterioration in his general condition. Within 12 hours of beginning sulphapyridine his temperature fell and he rapidly improved in every way. The only setback was due to a localised abscess which burst into the bladder. If the second course of the drug had been given sooner it is possible that this complication might have been avoided. In spite of it he made a complete recovery.

CASE 3.—Male, aged 18, admitted to hospital on Feb. 13, 1940, with abdominal pain which had lasted 2 days. Appendicitis diagnosed and at operation generalised peritonitis was found, a perforated retrocæcal appendix was removed and drainage instituted. Next day signs of peritonitis continued and M. & B. 693 was given, two tablets 4-hourly for 3 days, and one tablet 4-hourly for 2 days. Total 24 g. By the 18th the temperature had subsided but the general condition appeared to be worse and a large pelvic abscess was drained above the pubis. Feb. 24, pathological report on anaerobic culture of the pus: branching streptothrix resembling *A. bovis* and a heavy growth of fusiforms, coliforms, staphylococci and streptococci; aerobic culture, *B. coli*. On the 26th sulphanilamide was given, four tablets immediately, two tablets 4-hourly for 3 days and one tablet 4-hourly for 6 days. Total 38 g. The temperature fell rapidly to 98°–99° F. but began to rise again when the drug was discontinued, and he died 7 days later. Sulphur granules were found on March 3. At autopsy there was still evidence of general peritonitis.

This was a case of rapidly spreading peritonitis of appendicular origin. The patient showed some improvement after sulphanilamide, but not sufficient to prevent the development of a pelvic abscess and death from continued peritoneal infection. Pathological examination revealed a heavy growth of *A. bovis*.

CASE 4.—Male, aged 15, admitted to hospital on March 18, 1940, with a history of abdominal pain for 2 days, at first central, later going to the right iliac fossa. Vomited at the onset. Extreme tenderness was found in the right iliac fossa, with much surrounding rigidity. Operation was performed without delay, and a gangrenous perforated retrocæcal appendix was removed. One drain was passed into the pelvis and another behind the cæcum. On the 24th he had signs of pelvic abscess, which was drained suprapubically on April 3. Pathological report on pus: gram-positive branching streptothrix filaments and a few gram-negative bacilli. Aerobic culture after 14 days gave good growth of *B. coli*; moderate growth of slightly hæmolytic streptococcus; anaerobic culture after 14 days gave moderate growth of branching streptothrix resembling *A. bovis*. On April 7, fæcal fistula from gridiron incision. Signs of right subphrenic abscess developed on the 11th. The eleventh rib was resected and two large kidney-dishes of pus evacuated; tube inserted. On the 16th sulphanilamide was given, four tablets immediately, two tablets 4-hourly for 4 days, one tablet 4-hourly for 7 days; total 47 g. At the end of this course his general condition was improved, though he was still pyrexial. On April 29 the sinus was packed with 20% thymol in oil and thymol gr. 10 was given by mouth on alternate days.

On May 14 he was discharging pus from the umbilicus in addition to the grid incision, the suprapubic incision and the subphrenic incision. Second course of sulphanilamide given, three tablets immediately and two tablets 4-hourly for 7 days; total 43½ g. Temperature fell from 99°–100° F. to normal in 2 days. By July 7 he was getting up. Still discharging pus from umbilicus and rib sinus; suprapubic sinus healed; fæcal fistula from gridiron incision. Umbilical sinus closed on Aug. 4. Slight fistula from grid incision and slight discharge from rib resection incision. On Aug. 26 an operation for acute intestinal obstruction was necessary. Many adhesions found binding down small intestine; no abscess cavity. He made a good recovery and was discharged on Sept. 26.

Similar to case 3 but followed by recovery. He developed a pelvic abscess, a subphrenic abscess, an umbilical sinus and a fæcal fistula. Some improvement was noticed with the first course of sulphanilamide in the fifth week, but the effect of the second course in the ninth week was dramatic and sustained.

CASE 5.—Male, aged 32, admitted on Feb. 21, 1940, with history of 50 hours of abdominal pain. Appendicitis diagnosed, and perforated gangrenous appendix removed with drainage. The temperature in the first week fluctuated between 99° and 101° F. On the 28th a fæcal fistula developed. Temperature 99°–100° F. On March 5, thick yellow pus from wound; actinomycosis suspected. Pathological report: no definite sulphur granules; numerous gram-positive streptothrix filaments with occasional branching; anaerobic culture gave growth of streptococcus and gram-positive branching streptothrix resembling *A. bovis*; aerobic culture gave growth of coliform organisms and diphtheroids. Sulphanilamide given starting with four tablets, followed by two tablets 4-hourly for 4 days and one tablet 4-hourly for 2 days; total 32 g. The third, fourth and fifth weeks were apyrexial, and a second course was given on March 21 of two tablets 4-hourly for 4 days; total 24 g. By April 8 he had healed; no discharge.

In this case the diagnosis was made early and chemotherapy started on the thirteenth day. He became apyrexial at once, the discharge rapidly lessened, and he left hospital only 5 weeks after admission and has remained well since.

DISCUSSION

In our cases sulphanilamide and sulphapyridine have both been used. Both appear to be effective in treating this condition, but further evidence is necessary before deciding if both are equally effective. Many concomitant organisms were found including coliforms, hæmolytic and non-hæmolytic streptococci, fusiforms and

staphylococci. Some of these are known to be sensitive to the drugs used and it is not clear whether the beneficial results were due to this or to an action on the *Streptothrix actinomyces* itself. Early treatment, the value of which is illustrated by case 5, can only be achieved by suspecting actinomycosis at once in any patient with a sinus persisting after an appendix operation, and by examining the pus macroscopically, microscopically and culturally. Anaerobic cultures may have to be continued for 14–21 days before the organism is found, during which time the drug may well be given.

SUMMARY

Five cases of abdominal actinomycosis treated with sulphanilamide, sulphapyridine or both are described. Although all were severe infections 4 recovered completely; 1 died.

In one case, where deep X rays had also been used, a later operation showed that all evidence of disease had disappeared.

Chemotherapy should be tried early in all cases of suspected abdominal actinomycosis. Two or three courses of sulphapyridine, each lasting a week and with a week between, are usually needed.

We are indebted to Dr. Allen Daley, medical officer of health for London, and to the medical superintendent of Lewisham Hospital for permission to record these cases.

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ORAL ANTERIOR PITUITARY EXTRACT (COLLIP) IN DIABETES

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COLLIP (1940a and b) claims to have observed an important "anti-diabetogenic" effect produced by a primary alcoholic extract of anterior pituitary tissue administered by mouth. "Evidence that the extract has a profound effect upon carbohydrate metabolism" has been obtained, according to the summary in Collip's first paper (1940a). As Collip's claim is definite and very important, we have attempted to confirm his results as closely as possible on diabetic humans and dogs, with negative results.

EXPERIMENTAL

Preparation of anterior pituitary extracts.—Collip's (1939) description of the preparation of the "primary neutral alcoholic extract" states that three extractions are made of the ground anterior lobes, with four volumes of 95% ethyl, 5% methyl, absolute alcohol, and the combined extracts are concentrated at low temperature with the addition of water, until all the alcohol has been removed. The resulting sludge is chilled and filtered through paper, the fat thus being separated from the aqueous filtrate. Using fresh frozen ox pituitary glands (cf. Young 1937) we have found it possible to obtain a clear-cut separation of the fat by filtration at this stage, because in our experience the concentration of the alcoholic extract produces a stable emulsion of the fat in the aqueous phase. In the experiments with human beings described below we have used three different preparations. In the preparation of extract 1 the fat was removed by shaking out with ether; with extract 2 the fat was filtered off through kieselguhr, a tolerably clean separation being obtained, while extract 3 consisted of the stable emulsion of the fat in the aqueous phase. In the experiments with dogs (present paper) and with rats (following paper) extract 3 was exclusively used; in the animal experiments an extract of the alcohol-soluble material from ox-liver tissue, prepared in a manner similar to that of the pituitary extract (extract 3) was used for control purposes.

Estimations on blood and urine.—In the experiments with human beings blood-sugar was determined by the Folin-Wu method, and urinary sugar by Benedict's method; in the investigations with dogs the methods are those of Marks and Young (1939).

TABLE I—INFLUENCE OF ORAL ANTERIOR-PITUITARY EXTRACTS ON HUMAN DIABETICS

(Results are average figures for three-day periods)

—	Pt.	Sex and age	Insulin dosage (units daily)	Control period: Average glycosuria (g. per day)	Control period: Average blood-sugar (mg. per 100 c.cm.)	Experimental period: Average glycosuria (g. per day)	Experimental period: Average blood-sugar (mg. per 100 c.cm.)
First extract	A	M.62	Nil	1·8	..	1·5	..
	B	F.31	400	108	..	96	..
	C	M.34	32	..	131	..	135
Second extract	B	F.31	400	108	..	99	..
	C	M.34	32	..	87	..	107
	D	M.29	48	..	154	..	162
Third extract	B	F.31	Nil	249	..	244	..
	C	M.34	24	..	124	..	116
	D	M.29	44	..	66	..	67

RESULTS

With human beings.—As Collip himself has given his extract for only 2–4 days no long-period experiment has been thought necessary and the effect of the extract has been observed on controlled diabetics for only 3 days. In all cases the diet in the control period before and during the administration of the extract has been constant, and in insulin cases the dosage has been unchanged.

TABLE II—INFLUENCE OF ORAL PITUITARY EXTRACT ON PITUITARY-DIABETIC DOGS

(Results are average figures for five-day periods)

—	*Dog* 111, *male, initial Wt.* 7·50 *kg.* Period 1 Control	2 Pituitary extract	3 Liver extract	4 Liver extract plus 5 units insulin	5 Pituitary extract plus 5 units insulin	6 Control	*Dog* 112, *male, initial Wt.* 15·60 *kg.* 1 Control	2 Pituitary extract	3 Liver extract	4 Liver extract plus 5 units insulin	5 Pituitary extract plus 5 units insulin	6 Control
Protein ingested daily (g)	190	172	152	113	149	161	407	334	296	297	300	394
Sugar excretion (g./day)	106	99	80	58	81	95	215	179	158	155	161	200
D/N quotient	3·31	3·40	3·13	2·88	3·27	3·48	3·04	3·09	3·12	3·06	3·15	3·02
Ketone excretion (g./day)	3·88	2·28	3·96	1·85	1·70	4·43	0·35	0·31	0·29	0·16	0·10	0·63
Body-wt. change (kg./day)	− 0·06	− 0·07	+ 0·05	− 0·06	+ 0·06	− 0·08	+ 0·01	− 0·01	− 0·01	+ 0·04	0·00	+ 0·03

The total amount of pituitary extract administered daily was equivalent to 15 g. of fresh anterior lobe tissue. This was taken in three doses by mouth before meals. A few cases of mild, moderate and very severe type have been chosen and the results are seen in table I, which contrasts the figures obtained during control and "extract" periods for either the total glycosuria (g. of sugar excreted daily), or the blood-sugar concentration (mg. per 100 c.cm.) estimated at a standard time 4 hours after the morning insulin at the height of its activity. In the very severe case B the glycosuria has varied from day to day under strict control by as much as 50 g. and we consider the small differences in the tests, slightly in favour of the extract periods, to have no significance. The blood-sugar results are remarkably constant for such experiments on human diabetes and we consider that the observations clearly show no action of these pituitary extracts on the carbohydrate metabolism of such diabetic patients.

With pituitary-diabetic dogs.—Tests were made on two male dogs made permanently diabetic by the daily injection of anterior pituitary extract for a short period (Young 1937). As indicated in table II, dog 111 differed from dog 112 in having a slightly higher D/N quotient and a heavier ketonuria. Tests with the pituitary extract were carried out both when the dogs were receiving no insulin and when 5 units were administered daily. They ate as much horse meat (raw and cooked) as they would take each day but no carbohydrate food. It was not considered satisfactory to limit their food intake to a constant daily amount owing to the fall in body-weight which follows any limitation of the amount of meat eaten by these pituitary-diabetic dogs (Marks and Young 1939).

The amount of extract given daily (in the drinking water) was equivalent to 10 g. of fresh anterior-lobe tissue. It was usually taken within a period of an hour and a half.

The results given in table II indicate that no obvious influence of the pituitary extract on the D/N quotient, ketone excretion or body-weight of these animals was observed, either when no insulin was administered or when 5 units of insulin were injected subcutaneously each day in one dose at the same time as the pituitary extract was given. That the fall in sugar excretion which followed the administration of the pituitary extract was of no significance and was wholly due to the diminished appetite of the treated animals is indicated by the relative constancy of the D/N quotients. It is interesting to note that, in agreement with earlier results (Marks and Young 1939) the small dose of insulin was found to have little effect on the D/N quotient of these dogs, but nevertheless induced a definite diminution in ketonuria.

DISCUSSION

We have clearly failed to confirm Collip's claim that his extract "has a profound effect upon carbohydrate metabolism," in experiments with the diabetic organism. Collip (1940a) suggests that this extract exerts its effect through a "pancreotropic" action on the islets of Langerhans. In the following paper it will be shown that the extract has no obvious pancreotropic action, as judged from the insulin content of the pancreas of treated rats. No support can therefore be given to Collip's assertion that the oral administration of his extract exerts "an important anti-diabetogenic action."

SUMMARY

In experiments with human diabetic patients and with dogs made permanently diabetic by the administration of anterior pituitary extract for a short period no evidence was obtained to support Collip's claim that the oral administration of the "primary alcoholic extract of pituitary tissue" exerts a profound "anti-diabetogenic effect."

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PANCREOTROPIC FACTOR OF THE ANTERIOR PITUITARY LOBE

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IN the preceding paper by Lawrence and Young it was shown that Collip's claim that the "primary neutral alcoholic extract" of anterior pituitary tissue exerts an antidiabetic effect when administered by mouth (Collip 1940) could not be substantiated in so far as experiments on human diabetics and pituitary diabetic dogs were concerned. Since Collip (1940) suggests the possibility that his extract exerts its effect by virtue of a "pancreotropic action," it seemed desirable also to investigate this point directly.

Marks and Young (1940) used the increase in insulin content of the pancreas of the male Wistar rat which had been treated daily for 14 days as a measure of the pancreotropic activity of an injected extract, and we have followed this method in an investigation of the identity and properties of the pituitary pancreotropic factor. It should be emphasised that investigations from this laboratory (Griffiths and Young 1940) and from the laboratories of Prof. C. H. Best (Haist and Best 1940, Haist 1940) have failed to provide evidence that the anterior pituitary lobe exerts a hormonic control over the islets of Langerhans of the pancreas; it therefore cannot be assumed that the pancreotropic substance extracted from the pituitary gland is secreted to produce this effect naturally.

METHODS

The methods, both biological and chemical, are almost entirely those of our previous publication (Marks and Young 1940).

Groups of 10 male Wistar rats were treated subcutaneously each day for two weeks with pituitary extracts, and then killed, after fasting overnight, and the appropriate dissections and estimations made. In every experiment a control group of rats untreated with pituitary extract was included.

The crude extracts of pituitary tissue either fresh or acetone dried were prepared, as previously described (Young 1938), by extraction with saline at pH 8·5. The ox prolactin preparation used was that fraction of the crude alkaline extract which was insoluble at pH 5–5·5 but completely soluble at pH 8. This fraction was dried by precipitation with alcohol and ether, and was found to assay approximately 5 I.U. of prolactin per mg. of dry powder. The alcohol-soluble fraction of ox pituitary tissue (Collip) and of ox-liver tissue (control preparation) were prepared according to the method described by Lawrence and Young (previous paper, extract 3). With one exception the amount of extract administered daily is expressed as the number of mg. of fresh anterior-lobe tissue required to prepare that amount of extract; this is described as "mg. equivalent of fresh tissue." In the case of prolactin the weight of the dried preparation given daily in solution is indicated.

For the experiments with sex hormones a tablet of the crystalline material was subcutaneously implanted in the rat according to the technique developed by Deanesly and Parkes (1937) and the animal killed in a fasting condition one month later.

RESULTS

In our previous investigation (Marks and Young 1940) we showed that a daily dose of crude alkaline extract of ox anterior lobe (described hereafter as "ox A.P.E."), equivalent to 125 mg. of fresh tissue, induced a substantial but not a maximal pancreotropic effect under our conditions. In a series of 15 experiments with this dose of ox A.P.E., in each of which groups of 10 injected and 10 control rats were used (table IA), the insulin content of the pancreatic tissue from the control groups was found to be 0·68 unit per 100 g. of final body-weight, with a standard deviation of $\pm$ 0·15 for a single experimental group of 10 rats, indicating a reasonable though not high

degree of constancy among different groups. When the value for each group of injected animals was expressed as a percentage of the value for the corresponding control group the logarithmic average of the treated groups was 159%, with a standard deviation for a single value of ± 25%. If we take the customary limits of ± twice the standard deviation as representing the range of experimental variation, a percentage increment of 50 may be considered as significant in a single experiment. Using this criterion, we may consider all the values recorded in table IA as significant, while in table IB only the values for the experiment in which ox A.P.E. was injected into castrated male rats, and for that in which acetone dried ox pituitary tissue was used, can be considered as indicating a significant increase in pancreatic insulin content. Bearing in mind the above considerations we may, on the basis of the data in table I, draw the following conclusions about the pituitary pancreotropic factor.

Sheep pituitary tissue possesses about half the pancreotropic activity of ox tissue, while an extract of horse pituitary gland is inactive in the male rat.[1]

Griffiths and Young (1940) have shown that treatment with œstrogens substantially increases the insulin content of the rat pancreas; this is confirmed, with regard to the action of œstrone, by the data in table II. It

TABLE I—INFLUENCE OF ANTERIOR PITUITARY PREPARATIONS ON THE INSULIN CONTENT OF THE PANCREAS OF MALE RATS

Pituitary preparation administered	Amount given daily (mg. equivalent of fresh tissue)	Total no. of rats treated.	Blood-sugar (mg./100 c.cm.)	Pancreas: Weight (g./100 g. of body wt.)	Pancreas: Insulin content (units/100 g of body wt.)	Percentage increment of experimental above control groups
(A)						
Crude ox extract	125	150	102	0·43	1·10 ± 0·066[1]	62
None..	..	150	99	0·45	0·68 ± 0·040[1]	..
Crude horse[2] extract	190	40	116	0·42	0·64	Nil
None..	..	40	106	0·47	0·72	..
Crude sheep extract	250	60	109	0·41	1·06	60
None..	..	60	110	0·43	0·66	..
Ox prolactin (1 mg. = approx. 5 I.U.)	10 mg.	40	100	0·41	1·18	74
None..	..	40	107	0·42	0·68	..
(B)*						
Crude ox extract ..	125	20	128	0·45	1·49	107
Extract of acetone-dried ox gland ..	125	20	130	0·40	1·08	50
	350	30	111	0·41	0·84	17
Alcohol-soluble ox pituitary fraction	750	30	107	0·41	0·71	Nil
Alcohol-soluble liver fraction	1500	20	102	0·39	0·74	3
None..	..	90	113	0·43	0·72	..
Crude ox extract heated at 100° C.:						
(a) pH 3 for 3 min.	300	17	..	0·42	0·64	5
(b) pH 3 for 15 „	500	9	..	0·47	0·35	Nil
(c) pH 7 for 3 „	500	8	..	0·38	0·76	25
(d) pH 10 for 3 „	500	8	..	0·38	0·55	Nil
(e) pH 10 for 60 „	375	18	..	0·56	0·58	Nil
None..	..	33	..	0·48	0·61	..
Extracts by mouth:						
(a) crude ox extract	250	20	142	0·41	0·80	18
(b) alcohol-soluble ox pituitary fraction ..	1000	10	124	0·39	0·78	15
(c) alcohol-soluble liver fraction ..	1000	10	131	0·30	0·54	Nil
None..	..	40	127	0·42	0·68	..

* Castrated rats.

1. Standard deviation of the mean value.
2. Some extracts were prepared from acetone-dried whole pituitary glands.

1. There is some evidence indicating that pancreotropic activity is present in horse pituitary extract, though its action is masked by that of other substances in the extract. An investigation into this aspect of the problem will be the subject of a further communication.

TABLE II—INFLUENCE OF SEX HORMONES ON INSULIN CONTENT OF THE PANCREAS OF THE MALE RAT

Hormone	Approx. weight of tablet implanted (mg.)	Amount of hormone absorbed per day	Total no. of rats treated.	Average growth (g./day)	Blood sugar (mg./100 c.cm.)	Pancreas: Weight (g./100 g. of body wt.)	Pancreas: Insulin content (units/100 g. body wt.)	Percentage increment of experimental above control groups
Œstrone ..	10	23 μg.	21	0·9	111	0·46	1·04	89
Control (cholesterol)	..	..	20	2·9	100	0·37	0·55	..
Testosterone	30	0·6 μg.	10	1·3	107	0·41	0·54	0
Control (cholesterol)	..	..	10	2·4	103	0·38	0·54	..

The animals were killed one month after implantation of the tablets.

therefore seemed desirable to determine whether or not the pancreotropic action of pituitary extract in our male rats was an indirect one, mediated by the gonads which liberated androgens under the influence of the gonadotropic action of the extract, the liberated androgens inducing the rise in the insulin content of the pancreas. The data in table IB show that ox A.P.E. is at least as effective in castrated male rats as in normal animals, while the results in table II indicate that treatment with testosterone, unlike the administration of œstrogens, does not induce a rise in the insulin extractable from the pancreas of the male rat. Thus there is no reason to believe that the gonads mediate the action of ox A.P.E. in raising the insulin content of the rat pancreas.

Our ox prolactin preparation is highly pancreotropic (table IA), but it should be remembered that the pseudoglobulin fraction of ox A.P.E., which contains no detectable prolactin, is also highly active (Marks and Young 1940).

Acetone-dried ox pituitary tissue retains some pancreotropic activity (cf. Richardson and Young 1937), but both alcohol dried tissue (Collip 1939) and the alcohol-soluble fraction of ox pituitary tissue (Collip 1940) are not significantly active. When either ox A.P.E. or the alcohol-soluble fraction of ox pituitary tissue was administered by mouth to rats daily for two weeks no significant pancreotropic effect was observed (table IB). When ox A.P.E. was heated to 100° C. for a short time at various pH values little or no significant pancreotropic activity remained, a result which presumably serves to differentiate the glycotropic and pancreotropic factors.

The data in table I show that treatment with pituitary extracts under the conditions of our experiments exerted no obviously significant influence on the weight of the pancreas of the rat (expressed as g. of pancreas per 100 g. of final body-weight), or on the fasting blood-sugar level, although the latter was usually slightly raised.

DISCUSSION

The results of experiments with pituitary tissue from different species show that, while the sheep gland has about one-half the activity of ox tissue, horse pituitary tissue is inactive as judged from experiments with male rats. Since the horse extract is actively gonadotropic, while ox A.P.E. is only moderately so, we may provisionally assume that the pancreotropic factor cannot be identical with the gonadotropic substances, a conclusion supported by the substantial pancreotropic activity of the prolactin preparation, which fraction contains only a trace of gonadotropin.

Although the prolactin fraction we have used is highly pancreotropic it seems improbable that the pancreotropic factor can be identical with prolactin per se on the basis of the following considerations. 1. In our previous investigation (Marks and Young 1940) the pseudoglobulin fraction of ox A.P.E., which was free from detectable prolactin, was found to be highly pancreotropic. 2. The daily dose of ox A.P.E. which gives substantial

pancreotropic activity contains approximately 10 I.U. of prolactin, whereas the effective daily dose of our prolactin preparation possessed approximately 50 I.U. of prolactin. 3. Sheep pituitary tissue is rather more rich in prolactin than tissue from the ox gland (Chance, Rowlands and Young 1939), whereas the sheep A.P.E. has only about half the pancreotropic activity of ox A.P.E. The fact that our prolactin fraction possessed only traces of thyrotropic activity renders it unlikely that the pancreotropic factor can be identical with the thyrotropic substances. As already pointed out, the relative heat instability of the pancreotropic factor differentiates it from the glycotropic substance.

The negative results of the experiments on the alcohol-soluble fraction of ox pituitary tissue (Collip) given by injection, and of those on the oral administration of this extract or of ox A.P.E., offer no support for the suggestion by Collip that any effect on carbohydrate metabolism of his primary alcoholic extract administered by mouth is due to its pancreotropic action.

SUMMARY

The pancreotropic activity of different anterior pituitary preparations has been investigated, using the ability of such preparations to induce a significant rise in the insulin content of the pancreas of the male Wistar rat treated daily with extract for two weeks as an index of pancreotropic activity.

The pancreotropic activity of sheep pituitary crude extract was found to be about half that of ox pituitary extract, while horse pituitary extract was found to be inactive under comparable conditions.

Although a preparation of prolactin possessed a high degree of pancreotropic activity considerations are advanced for believing that the pancreotropic factor (which is probably not a hormone) is not identical with prolactin, nor with the gonadotropic, thyrotropic or glycotropic substances. Treatment with testosterone, unlike treatment with œstrogens, does not raise the insulin content of the pancreas of the male rat, and the pancreotropic action of pituitary extract appears not to be mediated by the male gonads.

Collip's primary neutral alcoholic extract of pituitary tissue was found not to be significantly pancreotropic when administered to rats either by subcutaneous injections or by mouth.

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TREATMENT OF IRREPARABLE RUPTURE OF THE URETHRA

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ALTHOUGH rupture of the urethra is comparatively rare, war injuries resulting in fracture of the pelvis and dislocation of the pubic bones are likely to increase the hazard of this trauma. The damage to the urethra may, at first, be overshadowed by other more obvious injuries, and the consequent delay in recognising and treating the urethral injury may prove fatal. Inadequate or misdirected treatment may initiate a course of events which ends with the patient in a state of chronic ill health and misery. In unoperated rupture, stricture follows within a few weeks, and, if periurethral suppuration and sloughing occurs, the extent and density of the stricture may be such as to render it irreparable. It was this end-result that had to be dealt with in the case described here.

CASE-RECORD

A glass polisher, aged 22, had been admitted to the Glasgow Royal Infirmary in October, 1936. He had fallen off his bicycle and was then run over by a motor lorry, a wheel of which was said to have passed over his abdomen. After being treated for shock his abdominal cavity had been explored. No visceral injury was found, though extravasation into the mesocolon and some blood-stained fluid in the pelvis was noted. The bladder was seen to be distended and a suprapubic cystostomy was performed, after an attempt to pass a catheter into the bladder had failed. Subsequent radiography revealed multiple fractures of the pelvis involving the ileum, the pubic rami and ischia. A month after the accident an attempt was apparently made to deal with the ruptured urethra by perineal section and retrograde catheterisation, and during the next three months he had eight further anæsthetics, when bougies and catheters were passed. He never succeeded in micturating and was ultimately discharged from hospital with a suprapubic tube. Suprapubic drainage was maintained for the ensuing four years, until January, 1940, when he was referred to the urological department.

He was then in a rather miserable condition. Urine was leaking around the suprapubic tube, and also from two sinuses on the inner aspect of the left thigh. In the perineum, a hard indurated mass could be felt over and around the urethra, between the root of the scrotum and the anal orifice. An impenetrable obstruction in the region of the bulbous urethra was encountered by a steel sound. The urine was grossly infected and radiography of the urinary tract showed a large branching calculus in the left kidney, forming a cast of the pelvis and calices. On intravenous pyelography no secretion of the injected medium came through on the left side, while the right kidney was represented by a normal pyelographic shadow. Under spinal anæsthesia an external urethrotomy was carried out, the indurated periurethral tissue being at the same time excised. The roof of the urethra was found intact and it was possible to identify the distracted edges of the floor and to approximate these by suture around a catheter, which had been guided into the bladder. The result of this operation was poor. During the ensuing six weeks he would pass on some days as much as 40 oz. urine, but on others only 2–3 oz. were collected. The passing of bougies became increasingly difficult and finally the entire urinary output was again coming through the suprapubic fistula and the sinuses on the thigh. It was now considered that the chances of repairing the urethra were remote and deviating the urine into the pelvic colon seemed the only alternative to a permanent cystostomy. The extensive calculus formation in the left kidney contra-indicated transplanting the ureter of that side. The plan of procedure decided on, therefore, was to transplant the right ureter into the pelvic colon and thereafter to remove the left kidney.

After three weeks at the convalescent home, transplantation of the right ureter into the pelvic colon by the Coffey no. 1 technique was carried out. He made an uneventful recovery from this operation and twenty-four days later the left kidney was removed. This operation was likewise followed by a smooth convalescence and three weeks later he was finally discharged from hospital. He was by then voiding urine per rectum about four-hourly during the day and could sleep for seven to eight hours at night without disturbance. The suprapubic sinus was completely closed as were also the two sinuses on the thigh.

Now, seven months later, he is working an eight-hour day as a clerk, and a recent intravenous pyelogram showed excellent concentration in the right kidney within five minutes, and no dilatation in the ureter or renal pelvis in films taken up to thirty minutes.

COMMENTS

Rupture of the bulbous urethra is the result of a crush between the injuring body and the pubis and is more common than rupture of the posterior urethra. It is followed by hæmorrhage from the meatus and a rapidly forming perineal swelling. Retention often though not always supervenes. Rupture of the posterior urethra is due to severe injuries involving fractures of the pelvis or dislocation of the pubis. Hæmorrhage is slight and some days may elapse before swelling in the perineum occurs. Since the rupture is a complete one, however,

retention is absolute and a distended bladder is early apparent. On rectal examination a tender swelling can be felt over the membranous or prostatic urethra.

Early treatment is called for, not merely to relieve the retention, but to prevent the minimum of permanent damage to the urethra. If there is no perineal swelling, and if a catheter can be passed into the bladder without difficulty, then it should be tied in and left for a few days. Thereafter bougies can be passed at intervals. If a catheter will not pass, and if a perineal swelling is present, operation should be carried out. The hæmatoma should be incised, clots turned out, and the torn edges of the urethra united over a catheter. In complete tears the most careful search may fail to reveal the severed vesical end, but it can be readily identified by passing a bougie along the urethra from the bladder, through a suprapubic cystostomy opening. In any event, suprapubic drainage should be temporarily established in all cases operated on. A catheter should be retained in the urethra for several days when the posterior urethra is involved, but need not be kept in for the bulbous variety after the torn edges have been united. Bougies should be passed at regular intervals, beginning about a fortnight after operation.

In old-standing irreparable cases, who have been subject to multiple operations, it should not be concluded that the patient must be condemned to a permanent suprapubic cystostomy, particularly if he is a young man. It is in these cases that deviation of the urine from the bladder by transplanting the ureters into the pelvic colon is indicated.

SUMMARY

Irreparable rupture of the posterior urethra need not condemn the patient to a permanent suprapubic tube. In a case described transplantation of the ureter of the one good kidney into the pelvic colon and removal of the other kidney, which was the site of a massive calculus, enabled the patient to resume an active life after four years of invalidism.

PREVENTION OF ACUTE ADHESIVE OBSTRUCTION

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The danger of acute intestinal obstruction threatens all patients who have once suffered from peritonitis. Bands or adhesions which have been symptomless for years may suddenly bring about the catastrophe. Yet we are uncertain of the factors which precipitate the attack, and therefore have been unable to advise these patients how best to safeguard themselves. This uncertainty arises primarily from a failure to distinguish between the two types of small intestinal obstruction—strangulation and simple obstruction. In the former, where a loop of intestine slips under a band in such a way as to occlude both its lumen and its blood-supply, the element of chance is so obvious that there has been a tendency to regard all adhesive obstructions as acts of God, and not to inquire too minutely into how they came about. If, however, simple obstruction alone is considered (and it is much the commoner of the two) it will be realised that there are only three ways in which a band or adhesion can affect the intestine—by encroaching on its lumen by pressure, by causing kinking, and by limiting its mobility.

It is the purpose of this paper to demonstrate that the catastrophe of obstruction is commonly produced by two simple mechanisms, both largely preventable. The first (fig. 1) is the impaction of a bolus of semisolid intestinal contents at the point narrowed by the band, the second is the excitation of excessive peristalsis either by a food bolus or by strong purgatives. The vigorous peristalsis rapidly drives the contents down to the hampered portion of intestine. Here the portion of intestinal wall which is fixed cannot equally participate in the mass waves of peristalsis, with the result that food is held up and distends the loop immediately above. If the distension is sufficiently great the intestine may become kinked at the fixed point and complete obstruction result (fig. 2).

The reason that a bolus of food is not more often found at operation is that by the time the surgeon explores the abdomen the accumulated intestinal juices churned by peristalsis have led to its disintegration, and vomiting has played a part in its removal. This may indeed cause the attack to subside as is shown by the number of previous attacks experienced by these patients, and Wangensteen and Paine (1933) have proved that the majority of even fully established cases of obstruction will settle down if the distension can be relieved by suction applied to a duodenal tube. Much of our knowledge of acute abdominal disease has been gained in the operating-theatre and post-mortem room, and since it is unusual for patients to reach either place soon after a large meal we have been accustomed to see the small intestine empty, so that the importance of the physical state of its contents has been underrated.

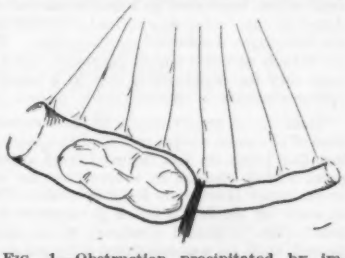

FIG. 1—Obstruction precipitated by impaction of bolus at point narrowed by band.

In a previous paper (Latchmore 1940) I reported 7 cases in which indigestible food became impacted in the normal small intestine. In 4 of these actual obstruction developed requiring surgical relief. In the others natural recovery followed the passing or vomiting of the food. If impaction can take place in normal patients it is clearly much more likely to do so in intestines stenosed by bands or angulated by adhesions. Yet there are few references in the literature to this as an important and preventable precipitating factor in acute adhesive obstruction. Elliott (1932) suggested that it must occur but produced no cases. Schlicke (1940), in a search for precipitating factors in 45 cases of simple obstruction of the small bowel, found that in 6 the attack had followed the oral administration of barium and in 3 the use of a strong purgative, but he does not mention foodstuffs. Lewis, Shapiro and Vaughan (1940) state that in patients with mild chronic adhesive obstruction "Symptoms appear only when the lumen of such a damaged bowel becomes blocked by a large meal of relatively indigestible foods such as coarse vegetables or dried fruits." In order to obtain evidence on this point, I examined a series of patients who had been operated on during the last eight years at the Leeds General Infirmary for acute adhesive obstruction. From this investigation it became clear that eating indigestible foods had such an important relationship to the onset of acute intestinal obstruction that it should be the duty of the surgeon, in all cases of severe peritonitis and other conditions where adhesions are likely to develop, to warn the patient of this danger. The following histories demonstrate the relationship.

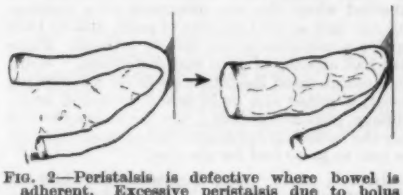

FIG. 2—Peristalsis is defective where bowel is adherent. Excessive peristalsis due to bolus or aperients drives contents down to hampered portion more quickly than they can be passed on. Distension therefore occurs above adhesion and kinking may precipitate obstruction.

CASE-RECORDS

CASE 1.—A tailoress, aged 24. Two years after operation for appendicitis she ate a pork pie and biscuits for lunch. This was followed by colic and vomiting which continued for three days, when she was operated on for obstruction due to the small intestine being adherent to the scar. After the

operation she remained subject to attacks of pain and distension. A year later she ate a meal of cold pork and bread in the evening on her return from work, and the attack which followed was so severe that her doctor was sent for in the small hours. At the time of these attacks she had very defective teeth, and she has been much better since artificial teeth were fitted.

CASE 2.—A taxi-driver, aged 30, had attacks of colic for a year which increased in number and severity until he hardly dared to eat. One day he had a pint of tea and two meat pies for dinner in a drivers' road-shelter. This was followed by an attack of colic which persisted until he was operated on next day for obstruction due to a band passing to a tuberculous mesenteric gland.

CASE 3.—A miner, aged 40, had repeated attacks of colic. One of the most severe followed the eating of apples. For the last five years he had suffered from attacks of flatulence and pain, which became so severe that he had recently been off work under treatment for gall-stones. On the first day back at work he ate half a small pork pie and some roast pork for tea. This produced a return of his symptoms, which continued until he was admitted with subacute obstruction. At operation a band was found constricting the small intestine 18 in. from the cæcum and lumps of undigested food were palpable in the loop above the obstruction.

CASE 4.—A storeman, aged 43, had uncomfortable false teeth which he removed at meal times. While working at a military hospital he ate a lunch cooked for the soldiers, which included hard haricot beans. That afternoon he was seized with pain, and at operation next day a loop of ileum was found loosely snared by a band and packed tight with beans. After division of the band these could easily be pushed onwards into the cæcum.

CASE 5.—A motor driver, aged 36, had appendicitis with peritonitis many years ago, and since then had had occasional attacks of colic, mostly after eating pork or pork pies. One day he took a pork pie and tea for lunch and an hour afterwards had violent diarrhœa. This passed off after a few hours, but was followed by colicky abdominal pain which continued for three days, when he began to vomit. He was admitted to hospital a week after the onset with subacute adhesive obstruction with a ladder-pattern abdomen. He was treated with intravenous saline and suction through a Miller-Abbott tube and settled down. Solid food was begun too early and he again became obstructed and had to be operated on. Massive adhesions were found involving the lower ileal coils and causing subacute obstruction.

CASE 6.—A girl shop assistant, aged 17, had appendicitis with peritonitis in 1929. Shortly after her discharge from hospital she had an attack of abdominal pain after eating an apple dumpling. This attack was said to be due to adhesions, and it soon subsided when she was admitted to a nursing-home. After this she had several attacks of pain, and in 1935 was operated on for acute obstruction due to a band. Since then she had still had attacks of pain and distension. Without prompting she enumerated the following foods which bring them on: coconut, whether raw or in cakes, bananas, cauliflower, nuts, cabbage, peas and onions. On the Sunday before I interviewed her she bolted an apple and had such severe pain after it that she had to go to bed for the day.

CASE 7.—A driver's mate, aged 37, who had had an appendicectomy with drainage. After having had various attacks of colic he one day ate a currant pasty in a roadside shelter for lunch. This brought on pains which persisted until his admission. At operation an acute obstruction of the ileum was found due to an adhesion to the mesoappendix.

COMMENTS

These histories speak for themselves. The foods blamed are very similar (pork in one form or another in three out of the seven cases, and pastry in six), and they are all foods well known to be indigestible, which, if improperly chewed, could enter the small intestine still in semi-solid form. Many of these patients had also suffered from lesser attacks of pain and distension after eating the other foods which I have previously shown (Latchmore 1940) to be liable to bolus formation in the small intestine—raw hard fruits, especially if unskinned, nuts, coconut, currants, cabbage, hard peas and beans and so on. The danger lies not only in the character of the food but in the way it is eaten. When taken in the middle of a large meal such foods pass through the small intestine diluted by much innocuous soft food residue. When taken alone they are moulded into a bolus by peristalsis and tend to become impacted. Thus the most dangerous type of meal is one in which meat pies, pork sandwiches or the like are eaten alone, swilled down by tea, and often bolted from haste or hunger. It is noteworthy that two of these patients were drivers of commercial vehicles and a third a driver's mate who ate the offending meals at roadside shelters or stalls. Insufficient mastication due either to defective teeth or inadequate use of them is obviously a most important factor. None of these foods would cause trouble if they were ground into pulp before leaving the mouth. The mere overloading of the small intestine with large meals would clearly be likely to have similar effects, and several of these patients have noticed that attacks of pain have been brought on by an exceptionally heavy meal.

Aperients.—Schlicke mentions three cases of simple small-bowel obstruction in which the onset was precipitated by the use of aperients. None of the patients I questioned blamed this for their attacks, but in reply to a questionnaire 11 out of 52 patients who had been operated on for general peritonitis due to appendicitis, and some of whom were likely to have adhesions, stated that they had suffered from attacks of pain after taking aperients.

PROPHYLAXIS

These patients have been left to find out by experience which foods their hampered intestines would no longer tolerate, and 7 of them paid the price of an attack of acute intestinal obstruction, whereas they could all have been saved pain and danger by suitable instructions on leaving hospital after their original operation for peritonitis. I suggest that all such patients should be given advice and put on a slightly restricted "post-peritonitis" diet before they are sent home. The following instructions appear to be suitable.

1. Ensure that you have an efficient set of teeth, whether natural or false.
2. Always eat slowly and chew thoroughly.
3. Avoid heavy meals; more frequent smaller ones are safer. Ensure that the main meal of the day, whether at midday or in the evening, is a "dinner"; avoid the "high-tea" type of meal. Be moderate in the consumption of meat and never eat tough meat.
4. Avoid coconut, nuts, nut chocolate, hard fruit, fruits with skins (unless peeled), hard peas and beans, pork, meat pies, pastry, bran and dried fruits.
5. Never take strong aperients.
6. If you do have an attack of abdominal pain put a hot-water bottle, hot flannels or a poultice on your abdomen and have some warm drinks. If it persists more than an hour or two send for your doctor.

SUMMARY

In 7 cases of acute adhesive obstruction the onset had been precipitated by an unsuitable meal.

Two important precipitating factors in simple obstruction from adhesions are (1) impaction of a bolus of indigestible food at the stenosed point; and (2) excitation of excessive peristalsis, either by a bolus or by strong aperients. Where a portion of the intestinal wall is adherent it cannot participate as well as the rest in peristaltic movements, with the result that food is held up, causing distension of the loop above. This distension, if sufficiently great, produces obstruction by kinking.

Both these factors can largely be eliminated by efficient mastication with the avoidance of indigestible foods and strong aperients, and such advice should be given as a routine to all patients on their recovery from severe peritonitis.

I wish to express my thanks to the honorary surgical staff of the Leeds General Infirmary for their permission to investigate and publish these cases.

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BLINDNESS FOLLOWING HÆMATEMESIS

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Amaurosis following severe hæmorrhage is comparatively rare but has been long recognised, having been mentioned by Hippocrates. It usually arises in cases of profuse and repeated hæmorrhage from the bowel or the uterus, but is almost unknown in cases of severe traumatic hæmorrhage. De Wecker was unable to find an example in the Franco-Prussian war. Terrien (1927) recorded a case in a French soldier in the war of 1914–18 who was wounded, and lay for four days on the battlefield unconscious from severe hæmorrhage. When seen in hospital twelve days after the injury the vision of the right eye was reduced to counting fingers, and that of the left eye to hand movements only. There was blurring of the disc edges with some peripheral contraction of the fields of vision. Visual acuity gradually improved to 6/60 in the right eye, and to counting fingers in the left. There was post-neuritic atrophy of both optic discs.

The fact that amaurosis occurs so seldom among war casualties suggests that there is probably a toxic factor in the production of the condition, possibly due to severe hæmolysis.

Barr (1934) quotes a case in a woman of 32 whose vision in the right eye was 6/36 and the left 6/12 after severe postpartum hæmorrhage. When examined a fortnight later there was well-marked neuroretinitis with swelling of the optic discs of three dioptres.

Rugg-Gunn (1938) reported the case of a man of 47 who, after severe hæmatemesis of some days' duration, became completely and permanently blind. In this case the red-cell count was reduced to 1,300,000. He also quoted two other cases, one after severe gastric hæmorrhage and the other after severe uterine hæmorrhage, in which the blindness was not permanent. Whiting expressed the opinion that amaurosis was likely to occur if the hæmoglobin fell below 50%. The opportunities for pathological investigation of such cases have been rare, but in the eyes which have been sectioned a generalised œdema of the retina has been found associated with degeneration of the ganglion cells.

CASE-REPORT

We have recently had the following case under our care.

A man of 46 was admitted to hospital on June 7, 1940. On May 26 he had had a severe hæmatemesis and another on May 29. He was kept in bed and treated by his own doctor. On May 31 he noticed that his sight was failing, and he gave a clear description of a gradual concentric contraction of the fields of vision. On June 4 he could not distinguish anything. During the previous six months he had experienced epigastric pain at regular intervals, both by day and by night.

His general condition was good; he was pale, but did not look profoundly anæmic; a few teeth were decayed. His arteries were not thickened and the cardiovascular system was normal, his blood-pressure being 90/60. The pulse was regular, and its rate varied between 72 and 88 during the first two days. Blood-count: red cells 2,340,000; Hb. 41%; white cells 7000. Urine normal. Both eyes were completely blind, the pupils being widely dilated and inactive to light. There was marked œdema of the retina at the posterior pole, with one dioptre of swelling of both optic discs, the edges of which were indistinguishable. All the retinal vessels were attenuated; there was no cherry spot at either macula.

He was given subcutaneous injections of acetylcholine on admission, without any improvement of sight. He was also treated with the regime usual for gastric ulcer, feeds being given regularly. Iron and ammonium citrate, gr. 30, was given three times a day from June 9. On June 10 the stools were free from occult blood; four subsequent tests were also negative. The Wassermann reaction was negative. On the 12th he was given a transfusion of a pint of blood; on the 30th the hæmoglobin was 43% and the red cells 3,800,000; on July 3 the hæmoglobin was 70% and the red cells 5,400,000. At this stage he was allowed out of bed. From June 15–19 his weight increased from 9 st. to 9 st. 9 lb. There was no further gastric hæmorrhage. He left hospital on July 20 in good general condition, but completely blind. The blindness has, of course, persisted.

The early symptoms in this type of amaurosis are not constant. Reported cases vary. Some show first a diminution of central vision, others paracentral scotomata; occasionally there are sector field defects; in this case a typical concentric contraction of the fields was noticed by the patient.

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Reviews of Books

Injuries of the Jaws and Face

By W. Warwick James, F.R.C.S., L.D.S., consulting dental surgeon to Middlesex Hospital; and B. W. Fickling, F.R.C.S., L.D.S., assistant dental surgeon to St. George's Hospital. London: John Bale and Staples. Pp. 193. 15*s*.

This book is based on experience in the last war, and in view of the dearth of books on this subject its appearance is welcome. It should be of great use to dental surgeons who may be required to coöperate in the treatment of these injuries. The book is generously illustrated, and the reproductions of radiograms and photographs of splints and models are particularly instructive. The general instructions for the early treatment of the patient and his wounds are well set out. In the treatment of the hard tissues the authors' preference is for interdental wiring, though cap splints are also used in the later stages. In recommending retention of teeth in the line of fracture the authors are at variance with the views of many other authorities, which are not mentioned. Most of the book is about fractures of the mandible, while fractures of the maxillæ, nasal bones and zygoma are dealt with in a few pages. The later repair of the soft tissues and the many operations which fall to the lot of the plastic surgeon are not described, except for a useful chapter on bone-grafting. Since the treatment of fractured jaws cannot be divorced from the treatment of the soft tissues this is an important omission, and limits the value of the book; but as a work of reference for the dental surgeon dealing with war injuries it can be strongly recommended.

Lectures on Diseases of Children

(8th ed.) By Sir Robert Hutchison, Bt., M.D., LL.D., P.R.C.P., and Alan Moncrieff, M.D. Lond., F.R.C.P. London: Edward Arnold and Co. Pp. 471. 21*s*.

Sir Robert Hutchison's lectures have been popular for a generation. The new edition has fresh illustrations and some modification of the text, three of the lectures (on infant feeding and prematurity) having been excellently rewritten. Many of the rest are little altered and thanks to Dr. Moncrieff's skill the book has not lost its unique quality.

Aids to Ophthalmology

(9th ed.) By N. B. Harman, M.B. Camb., F.R.C.S., and P. McG. Moffatt, M.D. Lond., M.R.C.P., F.R.C.S. London: Baillière, Tindall and Cox. Pp. 284. 4*s*. 6*d*.

The text of this edition has been thoroughly revised, some old matter discarded and rather more new introduced. The chapters on war injuries and on ocular therapeutics are well balanced and contain much practical information. The authors have tried to bring their notes on the visual standards required for admission to the fighting services up to date but these were changed during the preparation of the book. Seven pages seems too many to give to a description of tenoplasty, a reefing operation for the surgical correction of squint, but in the next edition space might be found for a brief description of the importance of achieving akinesia as a preliminary to an intraocular operation by barraging branches of the facial nerve with Procaine, and a note about the intravenous administration of sodium pentothal as an anæsthetic. The book is lucidly written, and the type is more easily readable than in previous editions.

Medical Societies

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

AT a meeting of this section held on Nov. 26 the chair was taken by the president, Sir MAURICE CASSIDY, and Dr. F. G. CHANDLER opened a discussion on the

Treatment of Traumatic Hæmothorax

Thoracic surgery, he said, had shown remarkable achievements since the last war, partly owing to the experience of that war. Few today thought treatment by abortive drugs of much value. The exploring needle was essential for diagnosis and treatment, and should be harmless and painless. The physical signs were very variable and might be most peculiar, even simulating pneumothorax with fluid of any kind; bronchial breathing was common. The value of X rays, both in diagnosis and subsequent control, could not be exaggerated. The problems of treatment could not be reduced to a simple one, for the hæmothorax might be simple, or infected, or complicated by many features. If the dome of the diaphragm were obscured in a radiogram there was probably half a pint of fluid or more and the condition was approaching the stage at which active treatment was essential. If infection was present drainage was urgent; there must be no waiting for toxæmia. The temperature might be no guide, often being raised in uninfected cases. Complications might include open wound of the thorax; indriven splinters of bone, missiles or clothing; damage to lung, with or without retained foreign body; pneumothorax, valvular or otherwise; perforation of the diaphragm, and injuries to other parts. These cases were matters for a specially trained surgeon. The first necessities for the simple non-infected case were rest; relief of pain and shock, cough and blood loss; and promotion of sleep. Sulphonamides would probably be used, but they could not entirely prevent infection, nor would they cure it when it had started. A small uninfected pneumothorax needed nothing more; for other cases the needle should be used within 24 hours. Every case must be treated on its merits; aspiration might be needed in a few hours or not for a few days. The replacement method, preferably using air, gave complete safety. If much blood were left, the sequelæ might be pleural thickening, inadequate expansion and calcification. Oxygen had no advantage over air and complicated the technique.

The patient should lie comfortably on his back and a point midway in the axilla should be anæsthetised, remembering that the diaphragm was usually high. Air could be introduced through the aspiration needle or cannula, or two interspaces higher. The cavity could be left open to the air, making replacement automatic. To aspirate any quantity of fluid without replacement was highly dangerous. Watch must be kept for the reaccumulation of fluid, preferably by X rays. Exploratory puncture must be performed if fluid appeared. In due time, breathing exercises and restoration of function were an essential feature of after-treatment.

Mr. G. A. MASON said that intrathoracic bleeding was apt to cease spontaneously at an early stage. Too much reliance should not be placed on a strong slow pulse, which might indicate a damaged autonomic nervous system. Rise of temperature might indicate further hæmorrhage or infection and called for investigation. A rising leucocyte count, the presence of organisms in fluid withdrawn, the general clinical picture and bad odour of the fluid indicated infection. Massive clotting might occur and might be absorbed or become calcified. Mr. Mason preferred not to operate for clot unless there were also infection. If there was no evidence of progressive hæmorrhage or involvement of the abdominal organs, a major operation should not be undertaken for small non-sucking wounds. Radiological examination before operation should be made carefully, showing antero-posterior and lateral views, upright and recumbent—or lying on back and side. Preparation for operation included rest, morphia, transfusion, oxygen and blockage of afferent stimuli. Blood was evacuated by suction or gentle use of absorbent pads. A Bipp-impregnated pack could be left in the chest for the control of hæmorrhage. If the parietes could not be closed because of damage to the tissues, tampons must be arranged, care being taken to see that they did not press on the great veins on the right hand side, and to supply syphon drainage below them. The principal objectives were to restore the function of the chests and to secure complete occlusion of the pleural cavity.

Dr. CLIFFORD HOYLE said that in the last war traumatic hæmothorax had had no mortality after the first two days provided it remained sterile. But infection occurred in a third of the patients and gave a bad prognosis both for death and for invalidism. The total toll was high. The presence of traumatised lung tissue was extremely important. In the simple form the hæmothorax was the chief lesion and cases did well; in the compound form hæmothorax was merely an incident and the patients did badly on conservative treatment and needed operation. Distinction was therefore vitally important. Lateral and anteroposterior radiograms of good quality were essential. Treatment in the early stages—the first few hours—was the same for all types of case; patients should be rested and given morphine for relief of pain, anxiety and insommia; morphine did no harm and might facilitate cough. They needed reassurance badly; hyoscine and phenobarbitone had their place. Transfusion—preferably with blood—was often useful. If there was increased intrapleural pressure the blood should be aspirated and replaced by a lesser quantity of air. A simple hæmothorax might produce no symptoms; a sample of the blood should be obtained to confirm the diagnosis and exclude infection; bacteriological report was necessary for this. Effusions took weeks or months to absorb, but could be removed surgically in an hour, and the lung could be re-expanded and the pleural sac replaced at the same time. Re-expansion was rapid, especially if helped by expiratory breathing exercises. Among the difficulties of air replacement was dry tap, usually due to trying too low. Villous tags might block the cannula. The end of the cannula might, in the posterior position, come into contact with expanding lung as the blood was withdrawn; this was overcome by injecting air. Most failures were due to the choice of too small a needle or cannula. Otherwise failure was due to solid hæmothorax, which should be evacuated. "Compound" hæmothorax meant complication by damage or foreign body. Injury to the lung was difficult to estimate, but of great importance. Surgical treatment allowed excision of wounds and traumatised lung, complete drainage and arrest of hæmorrhage; it could only be performed within a limited period, but gave dramatic results. The incidence of infection ran parallel with the incidence of retained foreign body. Infection must never be forgotten, it might occur several weeks after the injury. Often the only diagnosis was by aspiration, which was also the only treatment for the early stages. A tube must not be used too early, or loculation would prejudice recovery. The nutrition must be maintained as far as possible; these patients readily developed bedsores.

DISCUSSION

Mr. J. E. H. ROBERTS confined his remarks to the simple type. He found that if X-ray reports spoke of "a little fluid in the costal angle" he would aspirate 10–14 oz. He would aspirate on the third or fourth day unless there were contra-indications. Clotting was by no means exceptional; he believed that aspirated blood failed to clot because it had already clotted and not because of any anti-coagulant factor. It could not be absorbed in a clotted state, and a proteolytic ferment was not readily forthcoming in a sterile pleura and so the clot became organised, producing gross dysfunction. Therefore the blood in a hæmothorax should always be removed. If aspiration with air replacement failed, two cannulæ could be used, breaking up the clot through one tube. By the tenth day it was too firm to break up and the chest must be opened. After saving life restoration of function was the next object, and breathing exercises were very important as soon as the patient was fit for them. The only criteria of infection were the odour and tests of a removed sample. He did not like repeated aspiration, which was intermittent and incomplete drainage; he preferred to use a self-retaining catheter

stretched through a smaller cannula. Practically all cases required a later rib resection. Collapse was always due to bronchial obstruction, usually by blood clot; that obstruction should early be removed by suction through a bronchoscope, as otherwise a large proportion failed to re-expand.

Dr. J. L. LIVINGSTONE had found that simple infected hæmothorax was apt to go on to chronic empyema, and advised aspirations from time to time until, as far as possible, the pus was at the back and the lung in front. He had found a good deal of difficulty in gas replacement and felt there was a risk of infection if it were done in a ward. Anaerobic cultures should be used in diagnosing infection, but immediate smears were valuable.

Mr. TUDOR EDWARDS remarked that traumatic cases with no penetration of the chest were increasing in number under bombing. He favoured early removal of the contents of the pleura—within a few hours—and air replacement. This would stop bleeding from the lung, but not from the chest wall, and showed up quite small foreign bodies on an ordinary X-ray film. Many infected effusions yielded no organisms at an early stage if the fluid were drawn from too high up.

Mr. V. C. THOMPSON emphasised the difficulty of separating the treatment of hæmothorax from that of chest wounds. No difficulty had been found at the Harefield Chest Centre in aspirating the blood and cases had cleared up well. In most cases the percentage of hæmoglobin in the fluid had been below 20. There was often serious loss of blood protein, which should be replaced by transfusion. The importance of using a syringe with some valvular mechanism was often overlooked. Air should not be allowed to enter the chest in an infected case, as it might make a complete empyema instead of a small posterior pocket. Air replacement was purely an emergency procedure to collapse a lung and stop bleeding; to get re-expansion the air had to be removed as soon as possible. Breathing exercises gave remarkable improvements.

Mr. C. PRICE THOMAS said clotting might occur without infection and demanded removal. It was very difficult to keep an intercostal tube airtight. One complication which needed early recognition was the occurrence of acute dilatation of the stomach.

Mr. R. C. BROCK stressed the importance of differentiating between the "simple" and "compound" type. He preferred early aspiration, but patients usually needed 12–18 hours' rest first. In practice, the presence of a large hæmothorax often obscured the complication. A fractured rib, damaged costal cartilage or a sucking wound put the case into the "compound" group requiring surgery. If blood welled out with respiration, the wound might be called a "leaking" hæmothorax which was alarming, but should not preclude bold intervention. A large infected clot was most difficult to deal with, and the correct treatment was prevention.

Mr. C. O. S. TUBBS thought that even repeated aspiration sometimes gave misleading results, yielding a sterile fluid in infected cases if there were pus in some loculi and not in others. Chemotherapy was very valuable prophylactically.

SECTION OF ORTHOPÆDICS

A MEETING of this section was held at Hill End Hospital, St. Albans, on Nov. 30 with the president, Mr. S. L. HIGGS, in the chair, when Prof. FELIX BAUER presented a paper on the

Functional Treatment of Congenital Dislocation of the Hip

Mr. KENNETH PRIDIE, who read the paper, explained that Professor Bauer was orthopædic physician to the Municipal Hospital in Vienna, and had gained much of his experience in a routine examination of the hip-joints of Viennese children in a search for the earliest signs of this deformity. The condition is much commoner in Austria than in this country. It was his experience of the Lorenz method of fixed immobilisation, said Professor Bauer, that had led him to adopt what he termed the functional treatment. Fixed plaster methods led to stiffness of the joint and lack of development of the bony structures. The capsular ligaments were shortened, and his experience was that the late results, some 10–20 years after cessation of treatment, were poor, and that the incidence of osteoarthritis of the hip-joint was very high. The time to start treatment in these children was at the second month of life. Examination then would show nothing more than a shallow acetabulum, but such a joint was mechanically unsound, and without treatment was liable later on to develop osteoarthritis. Possibly these were also the hip-joints most prone to develop Perthes disease and slipped epiphysis. In a considerable number of the children the shallow acetabulum was associated with an adductor spasm and the radiogram showed delay in the ossification of the epiphysis. That delay was a danger sign, and these hips, if untreated, became subluxated. Very few hips were actually dislocated at birth. If seen early enough they showed the changes he had described, and by a form of treatment which combined abduction with function they became normal. Professor Bauer's objection to the Lorenz method was that normal function of the hip-joint was prevented by the fixation, and that therefore there was a repression of the normal development of bones, ligaments and muscles. In all the younger children, under two years, he reduced the dislocation without anæsthesia, using as little violence as possible. During the reduction the child's knee was in the axilla, and the femoral head was lifted forward by a rotatory movement. The reduction sometimes took quite a long time. The fully abducted position was then retained by a brace. In the small babies the brace was a simple affair made of cotton webbing, which went round the shoulders and chest and held the knee. At one year old a stouter brace made of leather was substituted, with an abduction stick running between the legs. Abduction to 90 degrees was usually sufficient at this stage. When the acetabulum was well formed, abduction to 45 degrees was enough and this could be retained by the abduction stick alone. During the whole treatment the children were allowed as much freedom as possible; they kicked about, stood up in their cots, and, later, walked. Hospitalisation was reduced to the minimum, they were easily nursed and bathed and led natural and healthy lives. The bones did not atrophy and the muscles did not waste. Of 86 hips treated by this method he had obtained 85 complete cures. In the older children, first seen when the condition was fully developed, the method gave good results but not so good. Prevention was definitely better than cure. The index in the radiogram of complete reduction was that the femoral epiphysis was seen to lie below the epiphysial line of the acetabulum.

Mr. H. A. T. FAIRBANK criticised the photographs and the films shown by doubting whether abduction was really maintained. The early cases, under one year, he said were never true dislocations but only subluxations. It was not a fair criticism of the Lorenz method to say it was not functional. Mr. Fairbank's own cases had walked from the start. The plaster was heavier, but that was, as far as he saw, its only disadvantage. He agreed that cases reduced after 18 months to 2 years rarely gave a joint so normal that a difference in the X-ray appearance was not detectable to the eye of the trained observer.

Mr. J. C. SCOTT said he had obtained good results by use of an abduction frame and gradual reduction. He controlled his results by arthrograms.

Professor BAUER in reply said that he had personally worked with Lorenz, and treated three hundred cases by his method. Lorenz specifically stated that the hip must be held quite immobile, although he allowed function of the rest of the limb. The result was that the muscles and ligaments did contract.

Closed Plaster Treatment of Wounds

Mr. HIGGS began by recalling that ten years ago he listened with incredulity mixed with horror to Winnett Orr's exposition of his closed-plaster treatment of osteomyelitis before the Royal Society of Medicine. However, Winnett Orr's results were impressive, and the method was soon adopted by orthopædic surgeons, who later expanded its use to the treatment of compound fractures. The fighting in Spain had given ample proof of the value of closed plaster in the treatment of wounds not associated with bone injury. With a vivid recollection of the horrors of wound treatment in the last war, of the

imperfect immobilisation, the delayed union and non-union, the pain and the toxæmia, one was compelled to the view that the closed-plaster method was a notable advance in the surgical treatment of wounds. His present remarks were based on his experience of 44 consecutive cases almost all of them wounded men from France. The majority had been admitted five days after being wounded, and were still wearing their uniform and their first field dressings, and almost all the wounds were heavily infected. It was too late for wound excision, so the wounds were cleaned, packed with vaseline gauze, and the limbs enclosed in unpadded plaster casts. In only one case was it necessary to remove the plaster prematurely, and that was on account of hæmorrhage from the circumflex artery. The advantages of the method were that it relieved pain and prevented toxæmia; that it stimulated the growth of granulation tissue; that necrosis and sinus formation were exceptional, and bony union rapid; that nerve suture was possible at an earlier date; and that it very much simplified the difficult problem of infected joints. In two cases he felt sure the adoption of this method had saved legs that otherwise would have been amputated. The disadvantages of the method must be recognised, so that they might be overcome. The first was that inexperienced application of plaster might lead to gangrene. He had seen three cases, two in the lower limb and one in the upper limb. It was important never to neglect pain when it was complained of, and always to be sure that there was efficient drainage to the skin. There was also the difficulty in maintaining extension in lower limb fractures; the smell, worse now in the long black-out hours than it had been in the summer; the fact that the wounds remained messy till the plaster was finally discarded; the dermatitis of the surrounding skin; and the poor quality of the skin that covered the wounds when they healed under plaster. Improvement in this last factor might be obtained if skin-grafting was used as soon as the fracture had united. The various agents used to combat the smell had been effective only for a week or two. The deodorising bags they had obtained from Oxford were the best antidote they had yet tried.

Dr. E. T. C. SPOONER reported the results of his bacteriological examination of the pus from the wounds enclosed in plaster. The hæmolytic streptococcus he had found to be the most important infecting organism. There had been no evidence to suggest that the anaerobes were doing any particular harm in the wounds. He warned the meeting that limb wounds treated in plaster were not completely protected from outside infection, and that organisms from the wound found their way to the outside of the plaster and were a potential source of danger to other patients in the ward.

Dr. J. TRUETA said he had been interested to find that Mr. Higgs's experience was the same as his own. Dry gangrene occurred under the plaster and not gas-gangrene. There was one type of bomb used in the Spanish War that did not seem to have been used in this country yet. Its effect was to produce small metal fragments of great penetrative power that broke bones without shattering the muscles. The contractile tone of the muscles was preserved and the fractures presented a problem more like closed fractures. Extension was a difficulty and traction was needed in a few. The closed-plaster method was capable of giving very good results in civilian casualties, but it had not been possible to use it in the front line. To protect the skin from maceration he advised leaving the plaster off for 3–4 days at a time.

Mr. RAINSFORD MOWLEM described the treatment of wounds by early skin-grafting. Two days of continuous local treatment with sulphonamide after granulation had restored the level of wound to the skin edges, followed by a split graft, gave rapid epithelialisation in the cases in which they had tried it. He believed that in something like 75% of cases the wound was healed at the next change of plaster.

Colonel RALPH BROOKE said that in France they had found that the difficulties of transport precluded the use of plaster. They used the Thomas splint for lower limbs and strapped the upper limb to the side. Debridement and flavine dressings had given surprisingly good results. The first dressing was allowed to dry on and only the outer dressings were changed.

Mr. PRIDIE said they had found ultraviolet light to be one of the most potent sterilisers of wounds.

Treatment of Burns

Mr. MOWLEM said that a first principle of treatment must be to avoid all methods in which the immediate results were outweighed by future calamities. He doubted whether it was possible to distinguish clearly between primary and secondary shock, the two conditions might be almost coincident. Delayed shock occurred after 6–8 hours, and the patient was gravely ill, the main cause of the condition being loss of tissue fluid. His impression was that plasma diluted to the normal concentration gave better results than the concentrated plasma. It was of the greatest importance to check the patient's hæmoglobin concentration. The figure of 115–120 meant that the patient was in extreme danger of immediate death. It had been found that a 5% rise required 250 c.cm. plasma to restore it to normal. If, for example, the hæmoglobin percentage was 110, 500 c.cm. must be run in rapidly, and then a slow plasma drip established.

The cause of the toxæmia in burns was not clear, but it was not due to a bacillary septicæmia, for in fatal cases the findings at autopsy were not at all comparable. Three degrees of burns were now recognised. In the first and second, the skin recovered, and the first purpose of treatment—to obtain healing—was not difficult to realise. For these burns, in which there was not complete destruction of the skin, tannic acid, or the dyes, or any combination of these substances, was probably a good treatment, except for the hands. It greatly decreased the difficulties of nursing. The trouble often was to be quite sure on first inspection what was the degree of the burn. Across flexures tannic acid should not be used, because the tan always cracked, and the wound always became septic under it. For third-degree burns, in which there was complete destruction of the skin, tannic acid was not to be used. The tan depended for its separation on epithelial growth beneath it. This did not take place in third-degree burns. The tan had to be removed with the knife and further mutilation was inevitable. Tanning had the further disadvantage of destroying a proportion of the remaining skin cells, and so delayed healing. The skin that was formed under the tan was of a poor quality and more vascular. He did not consider the various dyes any real improvement on tannic acid, and advised that all these serious burns should be treated by complete immersion—whether of patient or of limb—in saline baths. After two immersions the treatment was painless. Four hours a day should be spent in the bath, and the burnt area should then be covered with gauze soaked in saline always kept moist. Granulation was promoted, and the patient could painlessly move the hands through the full range of movement. The disadvantage was that the burns were prone to become rather easily infected, but sulphanilamide had removed a large part of the fear of sepsis. Early skin grafting was proving of great value, especially in burns of the hands. As soon as the surface had granulated level with the skin, powdered sulphanilamide was applied for two days. This temporarily stopped the streptococcal infection. A splitgraft was then applied, with powdered sulphanilamide beneath it. All burnt hands should be primarily treated by saline baths, and secondary grafting if skin loss was extensive. Tannic treatment produced first comfort, then a period of intense pain controlled by morphia, and finally painless fingers in which the circulation had been strangulated.

Sir Henry Dale, M.D., has been elected president of the Royal Society in succession to Sir William Bragg. Other officers of the society are: treasurer, Prof. T. R. Merton, D.Sc.; secretaries, Prof. A. V. Hill, Sc.D., and Prof. A. C. G. Egerton, F.I.C.; foreign secretary, Sir Henry Tizard, F.R.Ae.S.; other members of council, Prof. P. M. S. Blackett, Prof. F. T. Brooks, Mr. C. G. Darwin, Sc.D., Dr. A. N. Drury, Mr. H. J. Gough, D.Sc., Prof. J. B. S. Haldane, Prof. I. M. Heilbron, D.Sc., Prof. O. T. Jones, D.Sc., Prof. R. T. Leiper, M.D., Sir Thomas Middleton, D.Sc., Prof. L. J. Mordell, Mr. C. F. A. Pantin, Sc.D., Prof. H. S. Raper, M.B., Prof. E. K. Rideal, Mr. F. J. W. Roughton, Ph.D.; and Prof. A. M. Tyndall, D.Sc.

GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV. 26–28, 1940

AT the conclusion of the President's address, reported last week (p. 693), Dr. Daniel Fowler Cappell was introduced by Dr. D. Campbell as representative of the University of St. Andrews. The council then considered one case referred to it by the Dental Board: that of *Herbert Stanley Arnell*, who had been convicted of performing an illegal operation on a woman and sentenced to imprisonment. This name was erased from the Dentists Register. Three names were, after consideration in camera, restored to the Medical Register: *Peter Gerald Stevenson Davis*, *Aymer Douglas Maxwell* and *David Davidson Watson*.

Charges against Medical Practitioners

REPORTED CONVICTIONS

Two adjourned charges arising out of convictions for drunkenness were heard, and the names were not erased. The names of *Crichton Alison* and *James Adolphus Watson-Joe* were erased after convictions for procuring miscarriage and abortion.

An unusual case arising out of the present emergency was that of *Maurice Levy Lucas*, registered as of 44, Blacket Place, Edinburgh, 9, M.B. Edin., 1926, who had been summoned on the charge that he was on July 29, 1940, convicted at the Sheriff Court, Edinburgh, of fraud for obtaining 210 units of motor spirit by pretending to the South East Scotland petroleum officer that he was a medical practitioner and required the petrol for his practice; he had been sentenced to a fine of £15 or 30 days' imprisonment. Respondent was accompanied by Mr. Oswald Hempson, solicitor. Mr. Winterbottom, the council's solicitor, explained that the prosecutor had held that Mr. Lucas was not in practice at all, but occupied in managing a cinema. Mr. Hempson, however, produced before the council letters from patients in support of his contention that he was in fact engaged in practice, feeling that every doctor should hold himself ready in the present emergency, and the council decided not to remove his name.

A passport case, also not resulting in erasure, was that of *Angus Cameron Livingston*, registered as of 1, The Avenue, Bedford Park, Chiswick, London, W.4, L.R.C.P.E., who had been convicted at the Westminster police-court of making a statement known to him to be untrue for the purpose of procuring a passport for Maurice Bloomberg, otherwise Charles Maynard, and had been fined £40 and 10 guineas costs, or 2 months' imprisonment in default. Dr. Livingston attended and apologised.

ERASURE AFTER CONVICTIONS FOR DRUNKENNESS

The case of *Andrew Thornton*, registered as of c/o 38, Queen's Court, Bayswater, London, W.2, M.B. St. And., 1928, who had been summoned to appear before the council on the following charge:—

That you were convicted of the following misdemeanours, viz.: (1) On Sept. 11, 1937, at the City of Liverpool police-court, of being drunk and incapable, and were fined 10*s.*; (2) On Nov. 8, 1937, at the City of Liverpool police-court, of being drunk and incapable, and were fined £1 or 10 days' imprisonment in default; (3) On March 11, 1940, at the Marylebone police-court: (*a*) Of being drunk and disorderly (date of offence March 8, 1940), and were sentenced to 14 days' hard labour; (*b*) Of being drunk (date of offence March 9, 1940), and were fined 10*s.* and £1 2*s.* 6*d.* costs, or 7 days' imprisonment in default; (*c*) Of wilfully damaging a screen value £2 5*s.*, the property of the Receiver for Metropolitan Police (date of offence March 9, 1940), and were fined £1 and £2 5*s.* 0*d.*, or 14 days' imprisonment in default; and (4) On July 23, 1940, at the Marylebone police-court: (*a*) Of being drunk and disorderly (date of offence July 23, 1940); (*b*) Of assaulting William Walters, a constable of the Metropolitan Police, whilst in the execution of his duty (date of offence July 23, 1940), and were sentenced to one month's imprisonment with hard labour.

Mr. Thornton attended, accompanied by Mr. A. A. Pereira, counsel, instructed by Messrs. Le Brasseur and Oakley, on behalf of the London and Counties Medical Protection Society. Mr. Winterbottom laid the facts before the council, and Mr. Pereira addressed it on behalf of Mr. Thornton and called him as a witness. He expressed his profound regret and gave assurances as to his future conduct, but the council directed the registrar to remove his name.

DRUNKENNESS WITHOUT POLICE-COURT CONVICTION

The case of *Henry McNeill*, registered as of 2, Cedarne Road, London, S.W.6, M.B. Belf., 1920, who had been summoned to appear before the council on the following charge:—

That, being a registered medical practitioner, on Aug. 26 and 27, 1940, you were so far under the influence of drink that you were incapable of properly carrying out your professional duties towards your patients who were waiting to consult you at your surgery, 108, Pitfield Street, Hoxton, N.1, between the hours of 6 P.M. and 7 P.M. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

Corroborative evidence was submitted to the council by two patients. Mr. Hempson characterised the case as a pathetic one. Respondent had had a hard struggle with poverty all his life; last August his wife had been suffering from sarcoma and he himself had been sickening for scarlet fever, for which he had been admitted to hospital on Sept. 4. He knew very little of the incidents of those days and frankly admitted that he had been under the influence of drink, to which he had resorted in his misery. He had at that time been sleeping in the surgery, which had been boarded up as a refuge room; it was, therefore, much as if the patient had walked uninvited into his bedroom. He had not proposed to hold a surgery at all that night, having arranged with a colleague to see his patients. Since entering hospital he had abstained altogether from alcohol, and gave a solemn undertaking to do so in future. Judgment was postponed for one year, subject to the usual provisos.

ERASURES FOR ADULTERY

The case of *Martin Herholdt Jacobs*, registered as of 184, Old Street, London, E.C.1, M.R.C.S., 1924, who had been summoned to appear on the following charge:—

That, being a registered medical practitioner: (1) You committed adultery with Gladys Ethel Ivereigh, a married woman, of which adultery you were found guilty by the decree of the Probate, Divorce and Admiralty Division (Divorce) of the High Court of Justice dated Oct. 11, 1939, and made absolute on Feb. 26, 1940, in the case of Jacobs, E. V. v. Jacobs, M. H., in which you were the respondent. (2) You stood in professional relationship with the said Gladys Ethel Ivereigh and/or her family from about the beginning of 1934 until November, 1934. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

Mr. Jacobs was not present, nor was he represented. Mr. Winterbottom said that the respondent had written from South Africa saying that he could not attend, and that the husband could not obtain leave from his duties. There was therefore no oral evidence. The statutory declarations conflicted slightly over the dates when the respondent had first met Mrs. Ivereigh. There was no dispute that the doctor had attended Mr. and Mrs. Ivereigh's two children, but the doctor said that he had met Mrs. Ivereigh some time before. He agreed that he had seen her little son in 1927, but thereafter had not seen the mother for several months. In 1934 his wife had left him, sooner than become a mother, and he had sold his practice and gone to South Africa. He declared that Mrs. Ivereigh had never been a patient of his. The council directed the registrar to erase his name from the register.

The case of *Bernard Drummond Hendy*, registered as of 8, Kidderpore Avenue, London, N.W.3, M.R.C.S., 1923, M.B. Camb., 1925, who had been summoned to appear before the council on the following charge:—

That being a registered medical practitioner you abused your position by behaving improperly to, and committing adultery with, Mrs. Violet Stacey, who was a patient of yours, on numerous occasions between October, 1936, and June, 1940. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainants were Mr. and Mrs. H. C. Stacey, who were represented by Mr. T. F. J. Hobley, counsel, instructed by Messrs. Bulcraig and Davis, solicitors.

Mr. Hobley and Dr. Hendy asked that the case might be heard in camera, but the request was not acceded to.

Mr. Hobley said that adultery in 1939 and 1940 was admitted. Mrs. Stacey had gone to respondent for psychological treatment in 1936 and the professional relationship had continued at least until 1939 or longer. In that year the Staceys had moved to Gerrards Cross on account of their child's ill health. Affectionate letters written in July and August would be put in evidence. Dr. Hendy claimed that he had made it clear in March, 1939, that the professional relationship ended. A letter of Oct. 4, 1939, said, "About the 'patient' problem, that got so knotty that I solved it in my own mind by thinking of you as a friend solely. Perhaps that is *not* the right answer after all." Intimacies short of intercourse had taken place well within the time when the doctor himself admitted professional relationship.

Mrs. Violet Stacey testified to her statutory declaration in which she stated that treatment had begun in October, 1936, and early in 1937 the doctor had shown great affection for her and desire for physical intimacies. She had suggested going to another doctor, but he had shown great distress and begged her not to. They had discussed at length his intimate relationships with Miss G., another patient, and his difficulties with women. Knowing that she would not continue treatment if he persisted, Dr. Hendy promised to control himself. She had interviewed Miss G. who had advised her to give up the treatment. Dr. Hendy had written to and visited her at Gerrards Cross as a friend in 1939–40 and on nearly all occasions intercourse had taken place. He had mentioned his intimacies with Mrs. B., another patient, and they had quarrelled over this, and over a friendship with another patient. Intimacies had taken place in the consulting-room from February, 1937: at first the doctor had held her hand and touched her; adultery had first occurred in October, 1939. Her son had become seriously ill in March of that year. Her husband had been on A.R.P. duties from September, 1939, and away on certain nights, and on those nights intercourse had taken place. She had returned from Gerrards Cross in June, 1939. She identified a number of affectionate letters written in 1938 and 1939. In June, 1940, respondent had written asking for release from all contacts and intimacies associated with friendship, and asking for full mutual forgiveness. After this letter witness had talked to her husband and he to the doctor.

Dr. Hendy, cross-examining, suggested that the "intimacies" and "confidences" described by witness were made in an attempt to draw her out and help her; this she denied. She maintained that his feeling for women was abnormal. She admitted that she had seen Miss G. at his suggestion. She declared that he had spoken to her of many patients becoming friends and had debated whether, if he loved a woman enough, he should have intercourse with her. She denied having confessed, early in her treatment, that she was in love with him; they had acknowledged a mutual affection. She maintained that he had continuously asked for her friendship and love.

In reply to the President, Dr. Hendy said he admitted adultery but denied professional relationship at the time and maintained that his attitude during the professional relationship had not been improper.

Mr. Harold Charles Stacey, examined by Mr. Hobley, testified that he had interviewed Dr. Hendy on June 4, 1940. The doctor had said he was very sorry that things had turned out as they had and that he had been uncomfortable about them for some time. He had made no denial, and they had discussed the doctor's adultery with another married patient, the doctor saying that the husband knew. He confirmed the story of professional relationship already told. He had paid Dr. Hendy's bills monthly from November, 1936, to May 1, 1939. At the time of the boy's illness Dr. Hendy had talked to him of future treatment; he had thought at the time that the treatment had just lapsed because of the residence in Bucks.

A statutory declaration by Miss G. described Mrs. Stacey as very ill-balanced and hysterical and very much in love with Dr. Hendy. Miss G. had warned him against Mrs. Stacey as a dangerous woman. His behaviour during her own treatment had always been perfectly correct.

Dr. Hendy, addressing the council, admitted that the course of treatment he had taken with Mrs. Stacey was an utterly mistaken and dangerous one, but he had believed at the time that it was in her best interests. He had gone against the precepts of the strict psychoanalytical school for reasons he had thought good at the time. Cross-examined by Mr. Hobley, he said he had come to the conclusion that she was a dangerous woman about July or August, 1939, but had gone on writing affectionate letters throughout the autumn and had first committed adultery with her in October. He had failed to find the will to break from her until August, 1940. He claimed that there had been no professional relationship after May, 1939, the date of the last receipt. She had appealed to him for help when her son died in the late autumn of 1939 and he had done all he could for her in a friendly and psychological way.

In reply to questions by the President and legal assessor, Dr. Hendy could give no evidence for the breaking-off of professional relationship; it had been done verbally. He agreed that he had been charging the husband for professional services at a time when unwise and improper intimacies (short of adultery) had been taking place.

After a brief consideration in camera, the President announced that the council had found the charges proved and had directed the registrar to erase Dr. Hendy's name from the register.

The Pharmacopœia

Sir Farquhar Buzzard, chairman of the pharmacopœia committee, reported that the second addendum to the B.P. 1932 had been published and gazetted on June 14. Amendments designed to adapt certain monographs to the conditions of war-time were made official on July 5. He recalled that at the last session the preparation of a third addendum had been reported, to include monographs on certain substances not formerly made in this country but now being or likely to be produced by British manufacturers, in some instances under licence from the controller-general of patents. Most of these monographs were now complete, but some were awaiting the conclusion of experiments necessary for the definition of biological tests by methods of sterilisation. The available monographs had been collected and the third addendum was now ready for press. The need for a fourth addendum might be accentuated at any time by the necessity for adapting the official pharmacopœial formulæ to meet the present conditions which affect the supplies of glycerin, sugar and similar substances. A subcommittee of the Pharmacopœia Commission is studying substitutes for glycerin and sugar. The next pharmacopœia is due in 1941.

Students Register

Colonel H. L. Tidy, chairman of the education committee, said that the publication of the register of medical and dental students would be suspended during the present emergency. A list compiled from the returns received from school authorities will be available for reference in the G.M.C. office, and it is hoped that they will continue to make returns in order that the annual compilation may not be interrupted. The register for 1939–40, compiled but not printed, contains the names of 2535 medical students and 317 dental students admitted during the academical year.

THIRD ADDENDUM TO THE B.P.—The third addendum to the British Pharmacopœia 1932, to which Sir Farquhar Buzzard referred at the session of the General Medical Council reported above, will become official on Jan. 1, 1941. The new monographs deal with a number of British equivalents of foreign drugs, including bromethol (Avertin), carbachol (Doryl), soluble hexobarbitone (Evipan Sodium), iodoxylum (Uroselectan-B), leptazol (Cardiazol), mepacrine hydrochloride (Atebrin), niketha-mide (Coramine), phemitone (Prominal), and stibophen (Fouadin). The addendum will also make official a tannic-acid jelly containing 50 g. of tannic acid per litre under the name pasta acidi tannici, vitamin B_1 as aneurine hydrochloride, and parachlorometacresol as chlorocresol.

ANAHÆMIN B.D.H.

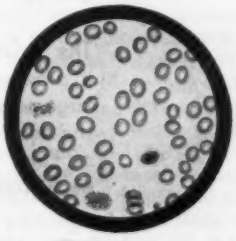
in the Treatment of Pernicious Anæmia

Clinical experience over a long period confirms the fact that the hæmatopoietic liver-principle, as exemplified in Anahæmin, on account of its high degree of purity and concentration, is the most potent agent available for producing blood regeneration in pernicious anæmia.

CASE R.C.

1940	Day of T.	R.B.C.	Hb.	Retic.	C.I.	W.B.C.	Treatment.
Jan. 25		1.56	42		1.35	6200	
Jan. 26				0.6			
Jan. 27				0.4			
Jan. 30	0	1.54	42	0.4	1.35	7000	**1 c.c. Anahæmin**
Jan. 31	1			1.2			
Feb. 1	2			3.2			
Feb. 2	3			4.8			
Feb. 3	4			12.0			
Feb. 4	5	1.92	48	13.0	1.25		
Feb. 5	6			13.6			
Feb. 6	7			11.4			
Feb. 7	8			5.8			
Feb. 8	9						
Feb. 9	10	2.47	59	3.0	1.19		
Feb. 14	15	2.84	61		1.06		**5 c.c. Anahæmin**
Feb. 28							**5 c.c. Anahæmin**
Mar. 14		4.65	85				

Blood film from case R.C. at beginning of treatment, January 30th, 1940. R.B.C. 1.54, Hb. 42, Retic. 0.4, C.I. 1.35, C.V. 21, M.C.V. 136.4.



Same patient on March 14th, 1940, after 3 injections (11 c.c. in all) of Anahæmin B.D.H. R.B.C. 4.65, Hb. 85 per cent.

The remarkable potency of Anahæmin is demonstrated by its effect in every case of pernicious anæmia. A recent report of a typical case of pernicious anæmia serves to illustrate this effect as well as the great economy of treatment which results. One single injection of only 1 c.c. Anahæmin acting over a period of fifteen days raised the initial red cell count from 1.54 million to 2.84 million and the hæmoglobin percentage from 42 to 61.

Two further injections of 5 c.c. were effective in restoring the blood picture to normal, accompanied by a complete clinical recovery which, in this case of considerable initial severity, was thus accomplished in six weeks by the injection of only 11 c.c. of Anahæmin B.D.H.

THE BRITISH DRUG HOUSES LTD. LONDON N.1

An/B/ 3

The Lister Institute
OF PREVENTIVE MEDICINE.

Therapeutic Substances Act, Licence No. 9

Anti-Meningococcus Serum

(Globulin Solution)

The results of animal experiments carried out both in this country and in the United States of America have proved that meningococcal infections are best treated by a combination of sulphonamide and serum therapy. A combined form of treatment is therefore advised for the treatment of cerebrospinal meningitis in man. Both therapeutic agents should be administered at the earliest possible moment. The serum may be given intravenously or intrathecally.

The serum prepared at the Lister Institute is subjected to a process of purification and concentration whereby a large proportion of the inactive serum protein is removed; the dose of antibody is thus contained in a smaller volume of fluid. Uniformity of potency is secured by assaying each batch of serum by a mouse protection test.

Three preparations are issued in concentrated form:

(1) Anti-meningococcus serum (multivalent)
(2) Anti-meningococcus serum (Group I)
(3) Anti-meningococcus serum (Group II)

An Anti-Meningococcus Serum for diagnostic purposes is also available.

Stocks of the Lister Institute products are maintained at Messrs. Allen & Hanburys Ltd., Vere Street, London, W.1 (Telephone: Mayfair 2216) and supplies can be obtained at any hour of the day or night.

Particulars with regard to these sera are obtainable from

ALLEN & HANBURYS LTD.
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Telephone: Bishopsgate 3201 (12 lines) Telegrams: "Greenburys Beth London"

THE LANCET

LONDON: SATURDAY, DECEMBER 7, 1940

MILK AND FRUIT

Lord WOOLTON is reducing the householder's milk by 10% during the next two months, and has told us to wish a temporary goodbye to imported apples, apricots, grapes and bananas. "On the best scientific advice," too, he has decided to stop the import of nearly all canned fruits and all fresh fruit except oranges, which will be available in meagre supply. The position in regard to milk is not serious. Production is down by 14% compared with last year but the consumption of milk as milk is up by 18%, thanks to the free and cheap supply to nursing mothers and children under five. Doctors will not quarrel with the decision to cut down the adult's consumption to meet this demand, and indeed most of us would be willing to stint the adult still further if the milk scheme could be extended to all children and adolescents. For it is in adolescence that the need for the calcium of milk is at its highest. The adult can get on quite well with first-class protein from other sources. All the same, we need our milk more now that cheese is short, and the Government will no doubt encourage farmers to increase their output.

We all appreciate the need for saving shipping-space, and little can be said in defence of most of the imported fresh fruits. The orange, with its friend the grape-fruit which we hope will also be excluded from the ban, is much the most valuable of them. Dietetically the apple has little to recommend it. Apricots contain 3000 units of vitamin A (a day's ration) per 100 g. (3½ oz.), but none of us rely on them for our vitamin-A intake. Grapes have no value apart from 16% of available carbohydrate, which can be obtained in smaller bulk elsewhere. Only the banana can make out a good case for its space in the hold. The vitamin-C content of the West Indian variety has been estimated as 7 mg. (140 I.U.) per 100 g.,[1] but newer methods of estimation have put it at 12–15 mg. or 240–300 I.U. Two bananas would thus represent a useful contribution to the daily ration of vitamin C. Moreover the banana contains 19·2% of easily available carbohydrate, which puts it at the head of the fresh fruits for calorie value. Its popularity with poor people, who eat so little fruit, should also be an argument for lifting the embargo as soon as possible. We have as yet been given no clue as to what Lord WOOLTON has in mind about canned fruits. Apricots, peaches, pears, pine-apples, grape-fruit, mandarins and tomatoes all retain part of their vitamin C after canning, but we do not ordinarily eat enough of them to miss them much except possibly those with a high vitamin-C content like grape-fruit and tomatoes. Loganberries, raspberries, blackcurrants, plums and strawberries were canned in England this year, and probably in amounts sufficient to see us through till next season. In one sense all fresh fruits are a wasteful cargo, for much of their weight is peel and of the remainder at least three-quarters is water; and tinned fruits are open to much the same criticism.

1. *Lancet*, Aug. 17, 1940, p. 190.

CHEMOTHERAPY IN OTITIS MEDIA AND MASTOIDITIS

OTITIS MEDIA does not seem to be the disease it was—it seems to be clearing up quicker and its complications are not so common. This has been so since the sulphonamides were loosed on it, but it does not necessarily follow that chemotherapy is responsible. Streptococcal and to a less extent pneumococcal infection of the upper respiratory tract is often secondary to influenza or one of the zymotic diseases, and it is in the severe epidemics of these ailments, when resistance is low, that the most troublesome cases of otitis are met with. Moreover, the virulence of secondary invaders varies and may be increased by passage. Some complicated and usually unobtainable data would therefore have to be produced before definite conclusions could be drawn from the study of any form of therapy over a short period. No such unimpeachable evidence of the efficacy of chemotherapy has yet appeared, and it happens that the three years during which the sulphonamides have been in common use have not witnessed any widespread epidemic of a sort likely to be accompanied by severe secondary streptococcal infection.

BOWERS[1] has analysed 793 cases of acute suppurative otitis media treated in New York during the last three years, of which about equal numbers were adults and children. In 231 early cases myringotomy was performed on or shortly after admission to hospital and the patients were kept in until the discharge ceased. Chemotherapy was used in 113 of them and not in the remaining 118. On an average otorrhœa lasted for nine days in the chemotherapy group and seventeen days in the others. Again, 387 cases were selected where the ear condition was only of a few days' duration on admission; 207 of these received chemotherapy and 12 (5·8%) of them progressed to mastoiditis, compared with 24 (13·3%) of the remaining 180 cases which did not receive chemotherapy. BOWERS gives a chart of the number of mastoidectomies performed at his hospital since 1929, with a rapid falling off since the introduction of chemotherapy. HORAN and FRENCH[2] report results in lads at the naval hospitals at Chatham and Shotley which are even more striking. Of 607 cases of acute otitis media treated from 1934 to the middle of 1937 without chemotherapy 138 (22·7%) developed mastoiditis, whereas of 621 cases treated by chemotherapy from mid 1937 to the end of 1939 only 21 (3·4%) developed mastoiditis. Moreover, there were 11 deaths from the complications of acute otitis media in the 3½ years before chemotherapy was introduced and there have been none since.

The drug must be given early and in full doses, and must be continued for some days after the disappearance of symptoms (a week according to BOWERS). Since the majority of cases are due to a hæmolytic streptococcus sulphanilamide is the drug of choice. If a culture of the aural discharge (or from the naso-pharynx if there is no otorrhœa) yields some other organism—usually a pneumococcus or staphylococcus—sulphapyridine or sulphathiazole should be substituted. Sulphapyridine is often used as a routine because it acts on both streptococci and pneumococci,

1. Bowers, W. C. *J. Amer. med. Ass.* July 20, 1940, p. 178.
2. Horan, V. G. and French, S. G. *Lancet*, 1940, 1, 680.

but it is more toxic and more likely to cause gastric and other upsets than sulphanilamide. HORAN and FRENCH found they could give large doses of sulphanilamide to outpatients (who were, however, under supervision in barracks) without encountering alarming toxic symptoms. Regular white-cell counts were done and if the figure fell below 5000 the drug was stopped and pentnucleotide given. But in their patients nausea and vomiting were common, and BOWERS takes the opposite stand of complete rest in bed, daily full blood-counts and repeated urine analysis. Safety with convenience can be attained somewhere between these two extremes. Most patients will certainly prefer to be in bed when receiving full doses of any of these drugs, and the blood should be examined at the outset and every three or four days until a week after the drug is discontinued.

BOWERS, HORAN, and FRENCH, and also LILLIE,[3] point out that chemotherapy may mask the onset of mastoiditis, but this need not be a danger if the possibility is remembered and the apparent well-being of the patient is carefully balanced against the local signs and symptoms. BOWERS quotes instances where the disease was cured in the soft and vascular tissues of the middle ear while it continued in the mastoid cells. The meatal discharge ceased and the drum healed, but exploration of the mastoid revealed bone necrosis and pus. In one of these cases there was an apparently normal radiogram. Thus where there is any doubt it is better to operate, but operation can now be delayed to a degree previously unthinkable provided the patient is under observation. Such an expectant attitude does not result in complications, for these are extremely rare when chemotherapy is begun early and is sufficiently intensive. When complications such as petrositis, lateral-sinus thrombosis, meningitis or labyrinthitis are already present massive doses of sulphanilamide must be continued after operative removal of the focus, but in uncomplicated mastoiditis BOWERS believes that chemotherapy is ineffectual and may only confuse the clinical picture, and he therefore stops the drug immediately after operation.

Even allowing for variations in clinical material and circumstances and in the virulence of the attacking micro-organisms the evidence is unmistakable that in the acute ear diseases chemotherapy is a powerful weapon, and as such must be handled boldly, though with an eye to the possible risks. It is only regrettable that none of the drugs is of the slightest use in chronic aural suppuration, for here the blood-supply is poor as a result of fibrosis, necrosis of bone has already taken place, and natural removal of the dead bone detritus is impossible.

SHELTER LEGS

SWOLLEN legs began to appear in doctors' consulting-rooms within a few weeks of the start of the bombardment of London. The condition may begin as simple œdema but later the skin becomes stretched, shiny red, and painful. The appearance suggests an early cellulitis, but there seems to be no primary infection, though bullæ and superficial ulcers may appear later. Thrombophlebitis may also develop, and should always be suspected where one leg is more swollen and painful than the other. Elderly women seem to be most commonly affected, but cases also occur in men and young people. Deck chairs are suspected as a likely cause of the trouble; they are used freely in the shelters, and the wooden cross-bar causes pressure on the back of the thigh or on the popliteal vessels. Patients sometimes complain of swollen ankles after long sea voyages when much of the time has been spent in deck chairs, and the condition has been seen in people flying home from Cape Town; the aeroplane seats are rather low and of a similar pattern to a deck chair. It seems that the circulation cannot be maintained against gravity unless there is a rest period at intervals. The œdema and reddening of the skin clear up at once if the patient is put at rest in bed, but such complications as ulceration and thrombosis naturally require prolonged treatment. The elderly and obese are loth to make use of bunks in the shelters even where they are provided, and since they are apt to sit about all day as well as all night they readily acquire shelter leg. Doctors can only hope to prevent this ailment by constantly impressing on their older and heavier patients that they must get their feet up for several hours out of the twenty-four—if not at night, then during the day.

3. Lillie, H. I. *J. Amer. med. Ass.* Aug. 17, 1940, p. 506.

HYPERIMMUNE SERUM FOR VIRUS DISEASES

ONE of the ways in which the body defends itself against the attack of parasites is by the formation of antibodies. Since this is nature's method of cure it has been natural to attempt to use antibodies both in the prophylaxis and treatment of disease. In the case of certain bacterial infections, notably diphtheria, tetanus and gas gangrene, the value of these antisera has long been recognised; in virus infections, although they give rise to highly specific immune bodies, the value of viricidal sera has not been so evident. This is usually put down to the fact that viruses, being intracellular parasites, cannot be killed by means of antisera once they have got safely into the cells. Yellow-fever virus in man, for instance, gives rise to immune bodies within three days of the onset of fever but despite the presence of these immune bodies the patient is only too liable to die during the next three or four days, the fatal damage having been inflicted before the development of immune bodies. Theoretically, however, in certain circumstances, antisera might be of value in the incubation period and even during the early stages of an infection. Only a few viruses—those of warts and molluscum contagiosum for instance—exert their pathogenic action on the tissues at their portal of entry; all the others have to travel by the blood, lymphatics or nerves to reach their target area. If the susceptible cells can be protected by a barrage of immune bodies then the virus cannot injure them. The time factor thus becomes of importance. If the time taken by the virus to travel from its portal of entry to its seat of activity is short the immune bodies will not have time to reach and protect the cells; if the time is very long the protection afforded by the immune bodies will have worn off owing to the excretion of the foreign proteins. The same thing may occur if the immune serum is given as a prophylactic before the virus has actually entered the tissues. In some cases, however, the virus may only arrive in sufficient concentration to infect at first a very few cells; immune serum may

then serve to protect the greater number of susceptible cells and the patient as a result suffers only from a mild or symptomless attack. It is thus obvious that the virus diseases in which immune bodies can be used prophylactically or curatively with success are limited to those in which either the incubation period is not too long or too short, or a massive and simultaneous infection of the susceptible cells does not occur. In measles there is now considerable evidence that convalescent serum, placental globulins or even pooled adult sera given during the incubation period either inhibit or at least modify the disease; there is even some support for the suggestion that serum given after the beginning of catarrhal symptoms will reduce the severity of the infection. In poliomyelitis there is still acute controversy as to whether immune serum given during the febrile period has any influence in preventing the onset of paralysis.

Indirect evidence on this question has been brought forward by ZICHIS and SHAUGHNESSY.[1] Using a hyperimmune serum prepared in rabbits against the western strain of equine encephalomyelitis, they were successful in protecting mice forty-eight hours after infection of the virus, while guineapigs were successfully treated after the appearance of the first sign of the disease. About two-thirds of the guineapigs given the serum immediately after the onset of fever recovered, and when they were killed two to four weeks after recovery histological examination showed that the well-marked inflammatory changes in the central nervous system were receding. A commercial serum produced by immunisation of horses but with an immune-body titre only about one-thousandth that of the rabbit serum entirely failed to protect either guineapigs or mice. For success it is evidently essential to use a serum with a very high immune-body titre, but the results show that provided such a serum is employed it is possible to halt the progress of an infective condition of the central nervous system in laboratory animals. The application of the results of these experiments to man is still uncertain since the doses used in mice and guineapigs were large. Thus for a mouse, presumably weighing about 20 g., the dose was 1 c.cm.; for an average man weighing 70 kg. this would correspond to a dose of 3·5 litres of hyperimmune rabbit-serum.

SIR HENRY DALE, P.R.S.

AFTER serving as secretary of the Royal Society 1925–35 Sir Henry Dale has been unanimously elected president. This will be an encouragement to those who like to see the Royal Society in close touch with human needs. The last war, with E. H. Starling as its agent, linked physiology to the nutrition of the people. May we not now hope that the nature and purpose of remedies will be made clear to us and the Phil. Trans. become the book of human experience? Moreover Sir Henry Dale will preside over the council which advises the Government on scientific matters.

Lieut.-Colonel G. S. PARKINSON, D.S.O., R.A.M.C. (retd.), is acting as dean of the London School of Hygiene and Tropical Medicine and directing the department of public health there since Sir Wilson Jameson's translation to the Ministry of Health.

1. Zichis, J. and Shaughnessy, H. J. *J. Amer. med. Ass.* 1940, **115**, 1071.

Annotations

MECHANISM OF CAPILLARY CONTRACTION

THE importance of the Rouget cell rests chiefly on the claim that it provides an anatomical basis for contraction in capillaries. These endothelial tubes are known to open and close their lumens independent of the activity of arterioles and venules, provided the tone of the capillary endothelium is high. Capillaries are provided with sympathetic nerves whose stimulation brings about closure of the lumen even when the arterial supply to them has just previously been completely obstructed. Through what intermediary do the effective nervous or chemical and physical impulses act? For about half a century certain fibrillar contractile adventitial cells, described by Rouget, have been credited with the ability to bring about this closure. A number of experimental observations made it doubtful that Rouget cells take the place of muscle-fibres, and Zweifach[1] by actual micromanipulation showed that when prodded with a needle the Rouget cell may become round and move away from the capillary, but that this movement does not cause any alteration in the capillary lumen. He also noted that stimulation of the capillary endothelium itself with micro-needles was followed by changes in capillary diameter. The exact means by which this change in diameter was brought about was left unsolved. By means of a still more refined technique Sanders, Ebert and Florey,[2] appear to have answered this question. They designed a special Sandison-Clark chamber for insertion in the rabbit's ear, which allows optimal illumination and optical arrangements for their observations. After the growth of capillaries into this chamber the peripheral end of the cervical sympathetic was stimulated faradically. After a latent period of 5–7 seconds the capillary lumen was closed. This happened through swelling of endothelial nuclei. These nuclei bulged gradually into and thus closed or narrowed the lumen, so that only greatly deformed red corpuscles could be squeezed through. Subsequent opening was accompanied by reduction in the nuclear swelling. No movement of the Rouget cells was seen during stimulation. The microphotographs which Florey and his colleagues have taken are convincing, and, for those who must see the phenomenon in action before they believe it, they have provided a cinema film in colour.

STRESS INCONTINENCE

THE involuntary passage of a small amount of urine accompanying a sudden rise of intra-abdominal pressure from whatever cause, be it a cough, a laugh, a sneeze or the lifting of a weight, is an extremely distressing disability. Only women are affected and the exact morbid anatomy of the condition is as yet undecided, largely because few anatomists are agreed as to what is the sphincter of the female urethra. There are two structures described: the external sphincter under voluntary control, lying between the layers of the triangular ligament with the deep transverse perineal muscles; and an ill-defined muscle bundle at the proximal end of the urethra, lying above the superior or deep layer of the triangular ligament, which has been described as an involuntary or reflex sphincter. This proximal sphincter relaxes when the detrusor fibres of the bladder come into play, thus following the behaviour of all sphincters in hollow viscera. Allan Barnes[3] has made some observations on the behaviour of the urethra and its sphincters in cases of stress incontinence before and after operation. He used radiography and concluded that the urethral sphincters are two—an internal and involuntary sphincter, which

1. Zweifach, B. W. *Anat. Rec.* 1934, **59**, 83.
2. Sanders, A. G., Ebert, R. H. and Florey, H. W. *Quar. J. exp. Physiol.* 1940, **30**, 281.
3. *Amer. J. Obstet. Gynec.* September, 1940, p. 381.

exerts a contractile force in direct proportion to the pressure of fluid in the bladder, and an external sphincter under voluntary control. By using radio-opaque sodium iodide in the bladder and taking direct manometric readings Barnes established that a given volume of fluid in the normal bladder results in a smaller intracystic pressure than exactly the same volume does in the bladder of a woman suffering from uterine prolapse. This simply means that the prolapsed bladder makes a greater demand on the internal sphincter than the normal bladder so that a cough or sneeze may provide the threshold pressure for incontinence, the external sphincter alone being unable to dam back the rising tide. By inserting a finger-shaped balloon into the urethra and filling it with sodium iodide Barnes demonstrated that the normal urethra is able to tolerate pressures up to 35 c.cm. of water and remain closed throughout its whole length, right up to the urethrovesical junction. Funneling of the upper end of the urethra indicates partial weakness of the internal sphincter and is a constant finding in many cases of stress incontinence. If the patient is asked to strain while the balloon is in position and the bladder partially filled intravesical pressures up to 80 c.cm. of water may be obtained. Even this increased pressure is unable to cause funneling of the urethrovesical junction if the internal sphincter is intact. Thus it seems that the internal sphincter is by far the more important of the two in preserving urinary continence.

SPLEEN EXTRACTS IN CANCER THERAPY

AN idea is widely held that certain tissues are antiblastic—that they, or their extracts, specifically inhibit the growth of tumour cells. The spleen especially enjoys a reputation as an antiblastic organ because macroscopic metastases of the spleen are rare. Microscopic deposits are often found in it however, as Kettle and others have shown.[1] These deposits are probably pumped out of its relatively wide sinusoids into the splenic vein before they are able to gain a hold by infiltrating the spleen itself. In fact the comparative freedom of this organ from secondary growths probably has a physiological and anatomical rather than a humoral basis. Nevertheless the number of experiments in which spleen extract is used as a therapeutic antiblastic agent continually grow. Extract of spleen, if injected into an animal will act as an antigen provoking antibodies to foreign cells of any kind that may subsequently be inoculated. Thus if the efficacy of extract is tested against the growth of transplanted tumours it becomes impossible to assess any purely antiblastic capacities which may have been conveyed by it to the injected animal. The only test in which an assessment of specific anti-tumour-growth properties can be made must be planned on spontaneous primary tumours. This necessity has been seen by Lewisohn, Leuchtenberger and Laszlo who report [2] some encouraging results.

The spleens used by Lewisohn and his colleagues came from mice which had received previous injections and transplants. The injections were highly concentrated extracts of beef spleen; the transplants were cells of mouse sarcoma 180. As was to be expected, some of these transplants regressed when the extracts provoked sufficient foreign-cell antibody to deal with them. The mice in which these expected regressions occurred were then made the source of the spleen extract used in the next test. The test of specific antiblastic action was made on spontaneous mammary carcinomas in a strain of mice in which natural regressions have never been observed. Among the tumour-bearing mice treated some growths regressed and disappeared. The final results are recorded in a footnote made 7½ months after the first treated tumour disappeared and about 4 months after the last. Of 83 mice, 17 were apparently cured; of these 17 only 4 had remained free of macroscopic signs of a tumour for 7 months. Recurrences had occurred recently in 8 mice which were classed as cured at the time of presentation of the paper and before the footnote was added. A longer period of observation and a larger number of animals successfully treated will be required before any great hopes can be raised by a method based on such a dubious theory.

1. Kettle, E. H. *J. Path. Bact.* 1912, **17**, 40.
2. Lewisohn, R., Leuchtenberger, R. and Laszlo, D. *Surg. Gynec. Obstet.* September, 1940, p. 274.

FŒTAL HÆMORRHAGE

IT is generally believed that hæmorrhagic disease of the newborn develops between the second and sixth days after birth but Javert [1] has obtained evidence of its onset during the first day in over a third of a series of cases. He calls attention to the higher incidence of antepartum complications in the mothers of these infants and finds the condition to be associated either with prolonged labour or with excessively violent uterine contractions. He reports [2] three cases of neonatal hæmorrhage which began in utero, in which the mothers had a severe labour of short duration. In two the amniotic fluid was blood-stained, and in the third there were placental hæmatomas. While it may be true, as Javert suggests, that uterine contractions increase the infant's intracapillary pressure and so tend to produce hæmorrhage, it is surely going too far to conclude that neonatal hæmorrhages may be regarded as physiological, becoming pathological only when the clotting mechanism is disturbed. Javert draws attention to his finding of a prothrombin level of 13% in one infant while that of the mother was normal, and this he regards as evidence in support of his idea. He also suggests that a low prothrombin level in the infant may be a factor in producing premature separation of the placenta, and supports Shettles, Delfs and Hellman [3] in advocating the administration of vitamin K to mothers during the last month of pregnancy to lower the incidence of neonatal hæmorrhage. On the basis of a single case he maintains that there is a reduction in the infant's prothrombin level when the mother has received antisyphilitic therapy. In this connexion it may be recalled that Horne and Scarborough [4] found an increased capillary fragility to be associated with intolerance to antisyphilitic treatment, and increased capillary fragility in an infant would presumably contribute to the production of hæmorrhage.

MACULAR DYSTROPHY

CONDITIONS like Doyne's choroiditis, Best's disease, Stargardt's disease, familial macular degeneration and various nondescript varieties of familial or hereditary macular affections float like disembodied ghosts in the literature on fundus lesions. That these affections are all different aspects of a distinct clinical entity is suggested by Arnold Sorsby [5] in an extensive survey of the literature, supported by eight personally observed familial groups. On the basis of his own cases he holds that while the basic form of the affection consists of mottling of the maculæ many families show considerable departure from the basic type, while all sorts of gradations occur between the two extremes. It is true that a familial stamp characterises the affection, different members of the same family often showing strong resemblances in their lesions; but well-marked variations are also present within some families. The duration of the affection is probably largely responsible for the differences in aspect in different members of a family, so that we should be careful to recognise intermediate

1. Javert, C. T. *Amer. J. Obstet. Gynec.* 1938, **35**, 200.
2. Javert, *Ibid.*, September 1940, p. 453.
3. Shettles, L., Delfs, E. and Hellman, L. M. *Bull. Johns. Hopk. Hosp.* 1939, **65**, 419.
4. Horne, G. O. and Scarborough, H. *Lancet*, July 20, 1940, p. 66.
5. *Brit. J. Ophthal.* 1940, **24**, 469.

stages as such and not as atypical variants. Two of the families Sorsby describes showed exudative reactions in the central area of the fund—a clear approach to the patterned exudative reaction of Doyne's choroiditis. That these are variants of the classical type is seen from the fact that in one of the families a member showed not the exudative reaction but the basic reaction of mottling. Massive pigmentary changes at the maculæ extending towards the periphery were observed in another family. The range of appearances is extensive, simulating retinitis, choroiditis, hole formation at the macula and even retinitis pigmentosa; and Sorsby's own evidence that all these appearances constitute one clinical group is supported by numerous isolated observations by other observers. The earlier attempt by Behr to systematise these affections he regards as too schematic, since it introduced artificial age-limits. Sorsby finds that the affection may develop at any age, making its appearance at the one extreme as a neonatal condition, and at the other as a senile macular degeneration.

Macular dystrophy may be so severe as to lead to total day blindness or so mild that vision is hardly affected. The condition is not of necessity rapidly and relentlessly progressive, as older observers believed. In its wide range of age-distribution and severity it offers a close parallel to retinitis pigmentosa. A further parallel lies in the genetic behaviour. Like retinitis pigmentosa, macular dystrophy has more than one mode of inheritance; it can be dominant or recessive and perhaps also partially sex-linked.

LIFE-CYCLE OF THE VACCINIA VIRUS

WHEN viruses were first investigated they were regarded as simple entities which multiplied only by fission. Further study of those viruses that are just large enough to be within the range of the most powerful microscopes has produced evidence that at least some of them go through a life-cycle more reminiscent of protozoa than of bacteria. The original demonstration by Bedson and Bland [1] of a developmental cycle in the psittacosis virus has been followed by similar findings with the viruses of trachoma, inclusion conjunctivitis and lymphogranuloma venereum. In 1939 Bland and Robinow [2] showed that vaccinia virus also had a developmental cycle, since in the epithelial cells of the rabbit's cornea grown in vitro the virus underwent a progressive and obligatory process of development. Closely similar findings have now been reported by Eisenberg-Merling,[3] using a technique by means of which it has been possible to examine the growth of the virus in the cells of the rabbit's cornea if necessary for weeks at a time. The appearances are described as being of three types, although since there is considerable overlapping this classification is more or less artificial. In type 1 the virus lives for only a short time; in type 2 the life-cycle is repeated several times and colonies having the appearance of cell-extrusions are formed but do not persist; type 3 shows repeated reproduction and multiplication in the form of what are assumed to be real cultures with a multitude of colonies, made up of cell-extrusions and cysts, and an enormous number of resulting individual virus bodies comparable to the numbers seen in bacterial cultures. It seems evident from these experiments that although the host cells die within a few days of their removal from the rabbit the virus is able to go on living for a much longer period, presumably because the necessary cell products are set free in sufficient amount. In other words, since inoculation of animals with material from specimens where the cells are dead and destroyed gives positive results, it is probable that vaccinia virus can multiply when dead cells or cell debris represent the source of energy.

Very similar conclusions have been reached by Findlay and MacCallum [4] working with a different technique on the virus of yellow fever. This virus was found to multiply in a medium consisting simply of Tyrode solution without glucose, provided that a small amount of chick-embryo tissue was also present. Since the Tyrode solution contained only inorganic salts there was no source of energy for the maintenance of cell metabolism, which must have been proceeding extraordinarily slowly if as is more probable it had not entirely ceased. Since the yellow-fever virus is unable to initiate growth in the absence of living cells, even when provided with a complete amino-acid mixture, it is possible that the rôle of the cells is to provide an essential metabolite. Once this metabolite has been provided it would then not matter whether the cells remained alive. Ellis and Spizizén [5] have recently shown, for instance, that cystine is an essential metabolite for a bacteriophage.

ENCEPHALITIS IN CHINA

WAR provides for parasites a golden opportunity to visit "fresh woods and pastures new." For some years past there has been widely distributed in Japan a form of encephalitis which to distinguish it from encephalitis lethargica has been termed encephalitis type B. There is some evidence that this infection is transmitted by mosquitoes, because its prevalence is greatest during the warmer months; but mice from apparently healthy stocks have been found harbouring the virus in their brains so that possibly animals may act as a reservoir.[6] It was believed that the infection was confined to Japan, but in the last few years—possibly because of the incident which is occupying the attention of the Far East—Japanese B encephalitis has appeared in China, and in the summer of 1938 an outbreak occurred in Peiping. Ten of the cases are described by Chu, Wu, and Cheng [7]: all occurred in children who were drawn from entirely different districts in the city and in no instance was there any history of contact between them. Three out of the ten died, and of the six whose sera were subsequently tested for immunity to Japanese B encephalitis and St. Louis encephalitis only one showed no immunity to the Japanese form, while all were negative to St. Louis encephalitis. This is in accordance with the finding of Webster [8] and others that no cross immunity exists between St. Louis encephalitis and Japanese B encephalitis. Using hyperimmune sera, however, Perdrau [9] was able to show that there is some slight antigenic relationship between the two viruses, the dimensions of which are both between 20 and 30 mμ.[10] Clinically the disease begins suddenly with fever, headache, and in about half the cases vomiting; drowsiness comes on early while other symptoms are tremor of the extremities or facial muscles, strabismus, Kernig's sign, rigidity of the neck muscles and Babinski's sign. In the cerebrospinal fluid the protein is invariably increased but the sugar content is normal. The total white-cell count varies from 68 to 88 per c.mm. with a high proportion of polymorphonuclear leucocytes. Sulphanilamide had no beneficial action. The fact that Japanese B encephalitis has left its island home for China suggests the possibility that it may spread to other countries in the Far East, if not further afield.

1. Bedson, S. P. and Bland, J. O. W. *Brit. J. exp. Path.* 1932, **13**, 461.
2. Bland, J. O. W. and Robinow, C. F. *J. Path. Bact.* 1939, **48**, 381.
3. Eisenberg-Merling, K. B. *Ibid*, 1940, **51**, 392.
4. Findlay, G. M. and MacCallum, F. O. *Brit. J. exp. Path.* 1940, **21**, 173.
5. Ellis E. L. and Spizizén, J. *Science*, 1940, **92**, 91.
6. Kawamura, R., Kasahara, S., Miyata, T., Ueda, M. and Yamada, R. *Kitasato Arch. Med.* 1940, **17**, 38.
7. Chu, F. T., Wu, J. P. and Teng, C. H. *Chin. med. J.* 1940, **58**, 68.
8. Webster, L. T. *J. exp. Med.* 1938, **67**, 609.
9. Perdrau, J. R. *J. Path. Bact.* 1940, **50**, 545.
10. Yaoi, H., Kanazawa, K., Murae, M. and Arakawa, S. *Jap. J. exp. Med.* 1939, **17**, 375.

SPINAL ANALGESIA

SPINAL analgesia still gives rise to greater differences of opinion among anæsthetists than any other method commonly employed. Some hold that for nearly every abdominal operation endothecal injection is by far the best method, while others believe that to use this when there is no contra-indication to inhalation is to expose the patient to unjustifiable risk. Opinions also differ as to the technique to be employed if spinal analgesia is adopted. No doubt much of this divergence of view would disappear if all the parties had equal experience. The man who favours spinal analgesia and has made himself a master of it gets better results than the one who uses it only occasionally. Perfection of technique, in short, as well as careful selection of patients, plays a great part in determining the success of the spinal method. The basis of selecting patients has changed a good deal since the early days of endothecal injection. At that time the indication for a spinal injection was often held to be, as A. D. Morgan points out,[1] "he is too weak for a general, give him a spinal." Today the anæsthetist regards as the ideal subject for a spinal the muscular plethoric patient requiring an abdominal operation for which satisfactory anæsthesia by inhalation is likely to be extremely difficult, rather than the patient who is very feeble or shocked. Most anæsthetists regard late spinal-cord lesions following endothecal injection to be few or entirely absent. Many neurologists, on the other hand, maintain that they meet with undoubted examples fairly often. Sporadic attempts have been made by anæsthetists, by following up their patients, to verify or disprove this contention, and so far as they have gone these investigations justify the belief that such lesions are extremely rare, but the question is certainly not positively settled.

PERIARTERITIS NODOSA

PERIARTERITIS nodosa is a disease more often diagnosed on the post-mortem table than thought of at the bedside, but since the end of 1937 Grant[2] has observed 7 cases at Guy's Hospital. Of these only 3 have died. The diagnosis was made on clinical grounds and confirmed histologically in 4; in 2 others it was suspected during life, and in 1 case only was the diagnosis first made after death. Grant points out that our present knowledge of the disease is inadequate because it is largely based on examples recognised as such only after death, so that the clinical, and to a less extent the pathological, pictures are necessarily incomplete. Our present knowledge may be compared to what was known of endocarditis at the middle of last century, before the rheumatic type was clearly differentiated from the acute and subacute types. The general picture is commonly that of a subacute illness with remissions and exacerbations, characterised by low and irregular fever, tachycardia out of proportion to the fever, leucocytosis (sometimes with eosinophilia), anæmia, progressive weakness and loss of weight; but any of these signs may be absent. The local manifestations of arterial damage are protean; such pointers as nodules along a superficial artery, pulsating subcutaneous nodules, obliteration of the pulse in small arteries, Raynaud's phenomenon or gangrene of the extremities, or anginal pain in a young subject, may give a clue. Nephritis may be suggested by affection of the renal vessels, appendicitis or duodenal ulcer by lesions of the mesenteric vessels, arthritis by lesions of the vessels to the joints, and peripheral neuritis or palsies may be caused by damage to the vessels supplying the peripheral nerves. The frequent occurrence of asthma in these cases is not so easily explained on a vascular basis.

If the disease is as common as Grant suggests many cases must at present be missed. The diagnosis of periarteritis should therefore be seriously considered when an unusual combination of symptoms arises such as nephritis in a case resembling acute rheumatic carditis, or an unusually high eosinophilia in a case of asthma. Evidence of local arterial damage should then be sought and the diagnosis clinched by biopsy of one of the affected arteries, for which serial sections may be required. It is clear from this study that the disease does not carry the gloomy prognosis formerly associated with it. Of those cases diagnosed during life—about 50 in all—half recovered, at least temporarily. It seems probable, therefore, that the incidence of cases with an immediate fatal termination will decrease as the diagnosis is more often made during life. No effective treatment is likely to be suggested until more is known of the course of the disease.

ROCKY MOUNTAIN SPOTTED FEVER

THE first description of Rocky Mountain spotted fever was written by a United States Army surgeon[1] in 1896 from Idaho: it is now usually believed to exist in two forms, a western and a less deadly eastern type. The western form is confined to Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon and California, but the eastern form has been gradually spreading and has been reported from 32 eastern states, the only ones not at present infected being Maine, New Hampshire, Vermont, Connecticut and Wisconsin. There is, however, little if any clinical basis for differentiating the two types though in the western variety the rash is more intense and more widely distributed, the febrile period is longer, the headache, muscular pains and arthritic symptoms more severe, and the tendency to produce small petechial hæmorrhages in the retina more pronounced. Although the incidence of the disease is not great, it has caused enough deaths to make it a serious medical problem. Moreover, in the first week, before the rash appears the diagnosis from typhoid, undulant fever or perhaps tularæmia may be difficult, and the rash may lead to confusion with typhus.[2] Of the 7 cases seen by Campbell and Ketchum[3] in Washington, D.C., 3 died. This 50% mortality is based on too small a sample to be of value, but in an analysis of 2036 cases made by Hampton and Eubank[4] 1435 cases of the western type had a case-fatality rate of 19·4% while during the same period the rate among 601 cases of the eastern type was 18·1%. The chief symptoms apart from the rash and fever were disorientation and irritability, headache, chills, injection of the conjunctivæ, meningeal irritation, coated tongue and photophobia. All the 3 cases that died suffered from bronchopneumonia and in addition to petechial hæmorrhages in the skin and white matter of the brain had subserous hæmorrhages in the brain, heart, kidneys, bladder and lungs; areas of focal necrosis were noted in the heart, brain, spleen, kidneys and testes, and in one patient cortical hæmorrhages were present in the right adrenal. Sulphanilamide was of no value, thus confirming the results obtained by others who have used sulphanilamide and sulphapyridine without success. There is evidence that the degree of immunity cannot be measured by means of agglutination reactions with proteus ox 19.

The sixth list of subscriptions to the Medical War Relief Fund brings the total amount contributed to over £10,400.

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2. Cohen, M. H. *J. Amer. med. Ass.* Oct. 26, 1940, p. 1441.
3. Campbell, E. P. and Ketchum, W. H. *New Engl. J. Med.* 1940, **223**, 540.
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In England Now

A Running Commentary by Peripatetic Correspondents

BICYCLING, to which I have come back after twenty-odd years of abstinence, gives longer time for rumination than more rapid forms of transport. As I pedalled along a country lane the other day I realised for the first time a curious fact—with the exception of the wild buffalo, which, so it is said, charges at sight, and in any case is so poorly endowed with grey matter that it is only just not anencephalic, every species of animal and bird avoids danger like the plague, unless it is forced to fight for its food, its mate or its young. Men, on the other hand, with the possible exception of the Chinese, seem to take a positive pleasure in getting themselves into dangerous situations quite unassociated with the satisfaction of any of their primary instincts. Even this bicycling business, for instance, must have been quite risky in its early days. My father has told me that when he was a student it was the commonest thing in the world to take a toss over the handle-bars of the old penny-farthing. Even the so-called safety bicycle had a slight element of risk in the days when one put one's feet up and coasted. A long hill near my home had at the bottom an old farm, and at every hour of the day, or so it seemed, cows were going to or coming back from milking. With the free-wheel there is no longer any trace of danger in cycling. Motoring, too, in Edwardian days was not without a thrill. When my father first bought a car somewhere about 1907 the whole village turned out to watch our departures and returns. Once on coming round a corner in a narrow lane we met a traction engine going full speed ahead with no-one on the look out, but by backing hard and running into a gateway we got off with only a crushed wing. On another occasion going along a sunken lane a cow which was looking over the hedge was so overcome at our quaint appearance that she collapsed into the road with a crash, missing the car by inches. Now, except for those who can race at Brooklands or beat speed records at Daytona Beach, there is no excitement in motoring. Peace-time flying has also become nearly fool-proof; to listen to commercial pilots talking is to realise that there is little difference between flying a plane from Southampton to Brindisi and driving a bus from Southgate to Bromley.

So far as existence in peace-time is concerned the small amount of danger left is entirely reserved for the favoured few who can still go down the Cresta run, ride at Aintree, or, if their fancy turns that way, play with pathogenic viruses that may turn and bite them. For the vast majority the only way to satisfy in some measure the desire for danger has been to participate vicariously in such things as dirt-track racing or all-in wrestling. All that is changed now and as in every other war the suicide-rate has gone down with a bang. Is it not possible that the too great security of life was one of the reasons why Nazism and all the other combative isms were so eagerly embraced by ardent youth? The essential bellicosity of over-civilised man may be merely an attempt to live more dangerously. This bellicosity, if one looks at it historically, is a comparatively new thing. In the Middle Ages the difficulty was to keep the feudal hosts together and prevent them from drifting back to the farm even after they had seen Paree. Later, in the Thirty Years War for instance, most of the fighting was done by mercenaries who acting on a strictly cash basis were only too ready to go over to the other side if offered five shillings a week more wages. Only when plagues, pestilences and famines ceased and life took on a slightly more stable aspect did the masses become really bellicose.

At this point in my cogitations there arose the familiar sound of aeroplane engines accompanied this time by the rattle of machine-gun fire. A Messerschmitt streaked across the sky followed by four of what our old gardener calls "them there Spitfire boys." In less than two minutes they were out of sight again—the hounds of heaven that "follow, follow after" in real life. Here, at least, was the quintessence of danger and excitement. By now I was at my destination, the Company Commander's meeting of a Home Guard battalion consisting of a dozen staid citizens, all over forty-five, who, as veterans of the last war, ought to have had enough excitement to last a lifetime, yet they had taken this chance of looking once more into "the bright eyes of danger." But why "the bright eyes"?

* * *

A lot of doctors say that now the papers have published the news that there is a fear of illness through overcrowding in shelters their patients are hurriedly paying their old bills. This is as it should be, though of course the lengthy credit taken is often due to the doctor being too lenient in money matters with patients. My own doctor is very fond of his own story about this. He was called up one night to the house of a man who was as much a friend as a patient; the man's wife gave birth to a fine pair of girls. While the doctor and the man were having a few drinks to celebrate the auspicious occasion the former mentioned in passing that his bill was now in the region of £175, whereupon the man got out his cheque book and started to make out the cheque. "Put that book away to-night for heaven's sake," cried the kind doctor. "A time like this is not the time for paying cheques." The man put his cheque book away.

Next week he phoned the doctor and told him that he was completely bankrupt; as an importer of fruit the whole of his capital was in a shipful of Canary bananas which had sunk; for some reason this particular consignment was uninsured.

* * *

The other day the hygiene doctor visited our battalion. I have no idea how many pips he had—or crowns—for he had his mackintosh on. I think he really came to see if the men's quarters were overcrowded—which they undoubtedly are. But it is no easy thing to turn a battalion out of its quarters once they are installed, and he was disappointed. Then he went along to the cookhouse just as the rations arrived, and saw some whole cod lying on the table, the end of one looking a bit dirty, having fallen in the mud—a thing that happens frequently in the Army. My pips were showing as I was in battle dress—one on each shoulder—so he had a great advantage over me. He asked me four irrelevant questions about the fish, which was in perfect condition, and I said "Sir" in answering the first and the fourth. He then asked the value of the fish; I replied that it was about £1 15*s.*, whereupon he triumphantly said that food up to the value of £5 could be condemned. I replied that nothing would please me more if he could be certain of getting me something as good or better for the men's teas. So he walked away. If he really thought the fish was bad it seems he did as much wrong in not condemning it on the spot as I would have done in serving it for tea if it had been. If he did not think it bad it was not in good taste to cast aspersions on it.

* * *

Any student of juvenile fiction will know that there are two essentials: one, the young reader must be able to identify himself with the hero; two, this person should be accused or at any rate suspected of some crime, the fouler the better, of which he is, of course, innocent, though his innocence must not be established until the last chapter, when the Colonel pats him on the head, brokenly murmuring, "England could do with more like you, my lad." This murky pleasure of feeling unjustly suspected and its orgasm of proved innocence is by no means lost in adult life, and I often come across traces of it in country practice: "They say I brought that miscarriage on myself, doctor, I know they think that I don't keep my house clean." I fancy it is a natural mechanism which prepares one for rebutting possible accusations—a studying of briefs on spec.—and that we all have it, but it only outs in people who by living alone are really in the same position as tribal outcasts, to whom the mechanism was no doubt very useful; a defence mechanism for the unfortunate, which, when it runs the machine, is paranoia. Other people, isolated by their position, like dictators, some royalties, some masters of ships, some headmasters, who to a large extent are immune from criticism—heavenly beings who have no other stellar bodies to keep them in their right position in space—also become queer, but more often incline to the manic-depressive type. I take it that a touch of mania with its superb egotism, insistent leadership,

fearlessness, and energy was a great asset to a leader in tribal warfare, and to some extent still is. The depressed stage is probably just a rest after the manic expenditure of vital energy. Personally I think that almost any man who had a long spell of omnipotence and adulation would tend to become manic and that anyone who had a long spell in the wilderness would verge towards the paranoiac, and that both states were, originally at any rate, not so much mental abnormalities as compensatory gifts, enabling their possessors to fulfil some particular function. Whether the manic leader and the paranoiac leader with their over-reaching, faulty judgment can function for long in the larger modern world is a question of moment.

* * *

One of the things I have against my hens is that they unduly fascinate my yearling child, who, balanced precariously on tip-toe and with nose pressed against the window-pane, studies them closely and long to the exclusion of more urgent matters. So rapt was he in contemplation the other day that he neglected to exercise his growing powers of sphincter control. Thoughtfully watching the stream trickling down his leg he suddenly became sanitation-conscious, and seizing from a near-by chair the handsome scarf knitted by his sister for the R.A.F., proceeded vigorously to mop up the pool on the floor. I should be grateful if some child psychologist could inform me whether this action is to be interpreted as an early manifestation of a desire to take up public-health work. Or did the scarf symbolise the R.A.F. in his infant mind and the puddle the Luftwaffe?

* * *

That ten days' holiday lays pleasant in my memory, though it was November. Our principal occupation was gathering Spanish chestnuts; a wonderful year for them. A glove helps to thwart the prickles, but my partner developed a pretty technique with a clasp knife. There is something very satisfactory in turning out of each pod the lovely brown nuts, glistening and inviting and contrasting with the beautiful silver fur lining of the pod. We saw only one other human on like quest in this wood, a lad who said he got a hundredweight the day before, for which he got 12*s.* in Hastings, but we saw lots of evidence of other robbers—grey squirrels, mice, and birds—so that we often wondered how any nuts finally escaped to reproduce their kind. Groping about on that lovely damp-smelling autumn carpet I seemed to hear a conversation between a buxom and a lank woman which began several million years ago. The chestnut said she believed in starting her children well, a good store of starch in the cotyledons, enough to last them till their roots were well down. The ash laughed at this pampering; she believed in treating them rough, chucking them to the four winds. "Some of them will worry through," she laughed callously. Then the mammals and the birds came, and the ash rocked with creaky laughter. "Look at your store now, it's being eaten by these legged things. Ha-ha." The chestnut must have wept bitterly for thousands of years over this, but thanks to a forgetful squirrel or two she managed to survive. Then, as in all proper stories, in the end the wrongs were righted, for the mammal man liked the nuts so much that he cultivated them and took them all over the world, and I too planted a number in gratitude. Sometimes in the droning November wind I heard the chestnut boasting again. "Of course, we come from an old Greek family . . ." "only came over here for the week-end with the Romans," "Lovely nuts, aren't they? I do believe in starting . . ." We tried various ways of cooking them. Boil for ten minutes and serve with jam or golden syrup; they are wonderful. Boil and mash with bully beef and fry; they make even that recurring ration interesting. Boil and fry with bacon; superb! One day we found an unexploded incendiary bomb embedded in the ground. We took the head warden and the village bobby up to see it. I noticed the bobby filled his pocket with nuts and ate them raw.

The work of the Tavistock Clinic continues as usual, at Westfield College, Kidderpore Avenue, London, N.W.3 (Hampstead 0136). Since the outbreak of war, the waiting-list has been abolished for adults and children.

Special Articles

SCOTLAND

HOSPITAL FINANCES IN EDINBURGH

A REPRESENTATIVE of the board of managers of the Edinburgh Royal Infirmary addressing a meeting of the league of subscribers complained that costs were mounting and revenue decreasing. The situation was going to be serious even allowing for a slight saving due to reduction in the number of occupied beds, and for the national payments received for reserved beds. True a substantial amount had been received in the form of bequests, but, in view of present conditions, that source of help could not be relied on in the future. The income available for the maternity pavilion was totally insufficient and discussions were going on between the local authority and the managers, who felt that the responsibility for the upkeep of this service should be shared by others. The whole position of voluntary hospitals called for reconsideration, and though it would seem inadvisable to make them wholly state institutions, some intermediate scheme, whereby hospitals could become state-aided without being state-controlled, might be devised. The advent of municipal hospitals, with conditions of individual payment, had introduced an unwelcome change to a public accustomed to the ways of the Royal Infirmary. Endeavours had been made to get the town council to give free treatment, without success, and the likelihood of a change of policy was now somewhat remote.

The league decided to start negotiations to arrange that any subscriber to the infirmary who requires to enter a municipal hospital will have his payments made out of a special league-of-subscribers fund by the treasurer of the infirmary.

CIVILIAN PATIENTS IN EMERGENCY HOSPITALS

The insurance committee of the County of Lanark recently invited the Department of Health to utilise part of the accommodation of emergency hospitals for ordinary civilian cases. The proposer of the resolution said that doctors in Lanarkshire had been striving for many years to secure the development of improved medical services for the community. Since the war a proportion of the hospital beds had been reserved and the result had been that the admission of civilian cases had been delayed more than ever. Several emergency hospitals had been started in Lanarkshire; one with 600 beds—to be increased to 1300—and with a staff of 180 people, including several resident doctors, had 27 beds occupied. Nurses, becoming bored, were leaving; staffs could not be kept at concert pitch if they had no work to do. If the department would allow a proportion of these empty beds to be used for civilian cases it would relieve the present situation and would benefit the hospitals by keeping the staffs occupied. Should the beds occupied by civilian cases be required for military patients, the civilians could be transferred.

EDINBURGH CHURCH CLINIC

A family clinic is being formed in connection with Davidson Church, Eyre Place, and it is hoped that the premises taken in Fettes Row will be in working order by the new year. Dr. M. Winifred Rushforth and Dr. Elizabeth V. MacLeod, who are to assist at the clinic, were present at a meeting, held on Nov. 3, of those interested. The Rev. Roy Hogg, who took the chair, said that the purpose of the clinic would be to treat cases of maladjustment, faulty social behaviour and breakdown in health. Security was primarily to be sought in the parent-child relationship, so that the clinic unit was to be the family. As soon as there was a large enough medical staff the clinic would deal with children and adults suffering from psychogenic disorders. Dr. McLeod made it clear that the approach to maladjusted children would be by play therapy. Thanks to the co-operation of some of the Edinburgh physicians, children would be given medical as well as psychological treatment if they needed it. Dr. Rushforth saw the clinic as coming into being not so much in spite of the war as because of it. Hitler, by persecuting the Jews, had

dispersed psychotherapeutic workers all over the world, and many of them had been received in England and Scotland. She is right in supposing that they cannot fail to give impetus to the study of psychotherapy.

DERMATOLOGICAL HINTS TO PRESCRIBERS

THE Therapeutics Requirements Committee of the Medical Research Council have now supplemented their memorandum on economy in prescribing with the following suggestions about drugs used in dermatological practice.

Ointments.—For many of the purposes for which ointments are prescribed pastes and creams are more satisfactory and require only about half the amount of fatty basis. Fatty vehicles can sometimes be replaced by wet dressings (with or without mucilage), antiseptic paints and varnishes, or powders.

Antiseptics.—Boric acid and iodine need not be used in dermatology. The amount of mercury used could be greatly reduced and it need only be available for trial in cases in which alternative antiseptics have not proved satisfactory. If the antiseptics for local application to the skin were limited to aniline dyes, coal-tar derivatives, salicylic acid, sulphur, ichthammol, resorcin, dioxyanthranol, silver nitrate and tar, the treatment of most skin diseases would not suffer greatly. Tar in the form of crude gasworks tar is efficient and cheap.

Ringworm.—Mercurials and iodine are rarely required for the treatment of ringworm, whereas a paint containing fuchsine and Whitfield's ointment of benzoic and salicylic acid are effective remedies which are freely available.

Scabies.—Should epidemics of scabies occur, treatment will be most economically carried out if put under the control of doctors with special knowledge of skin diseases. A large number of chemical substances will destroy the acarus and all local treatments depend largely on the efficiency of application. Sulphur ointment still remains one of the most efficacious remedies [1] and the frequency of sulphur dermatitis has been overstated. If supplies of benzyl benzoate are short this substance would be best reserved for treatment of children.

Pediculosis.—For body lice a thorough bath and a change of clothing usually suffice. Oily dressings are not essential for pediculosis of the body and scalp. Head lice can be killed by soaking the hair in carbolic lotion (1 in 40) for about an hour, and the nits can then be removed with a fine comb after the application of vinegar or dilute acetic acid. Oily applications are of some value in pediculosis pubis, and an ointment of 5% β-naphthol may be applied after shaving the affected area.

The committee have divided drugs used in dermatological practice into the same groups as they used in their previous memorandum.

In class A they place drugs which they regarded as either readily available or essential. This category includes: acriflavine, aniline dyes, benzoic acid, calamine, chloroform, coal tar, ether, hydrochloric acid, hydrogen peroxide, ichthammol, kaolin, light magnesium carbonate, lysol, phenol, resorcinol, salicyclic acid, silver nitrate, sodium bicarbonate, sulphur, tannic acid, wool fat, zinc oxide, and zinc sulphate.

Class B includes drugs which the committee consider essential for certain purposes but whose use should be restricted. Their suggestions for substitutes are given in parentheses: aluminium acetate (lead acetate), ammoniated mercury, benzoinated lard, borax should be reserved for hydrous ointment (the glycerin and the honey of borax may be replaced by watery solutions of aniline dyes in the treatment of thrush), boric acid (saline compresses instead of boric fomentations; for dusting powders talc, zinc oxide, magnesium silicate or kaolin), chrysarobin (dioxyanthranol), glycerin, iodine (proflavine, acriflavine, trinitrophenol, crystal violet, or brilliant green), liquid paraffin, magnesium sulphate (sodium sulphate), mercuric chloride, olive oil, sesame oil (peanut or other vegetable oil if available), soft paraffin, starch, and zinc oleostearate.

In class C, which contains drugs whose efficacy does not justify importation or manufacture in war-time, they place almond oil and sulphurated potash. They suggest that sulphur ointment or a solution of sulphurated lime may be substituted for the latter.

1. Cf. *Lancet*, 1940, 1, 602.

Parliament

MANY members of the House of Commons are still uneasy about the economic side of our war effort. They feel that while Parliament and the country have entrusted ministers with very wide and comprehensive powers, and shown their willingness to expand those powers to any necessary extent, the Government has shown a certain reluctance to adopt an all-in policy which would raise our production of war equipment in the shortest space of time. This point of view found expression in some remarkably frank speeches during the debate on the address in reply to the Gracious Speech from the Throne. Mr. Shinwell, for example, begged ministers not to be over-sensitive to criticism and to realise that more was to be gained by being receptive than by being obstinate. There was, he declared, lack of cohesion in Government speeches on our productive power; the Government should perform like a symphony orchestra and not like a jazz band. The nation had no desire to be fobbed off with an exaggerated optimism which had no foundation in fact. The people would not fail because they knew the worst, but there was a danger of complacency when ministers indulged in fairy tales. Mr. Greenwood, who is the minister in the War Cabinet charged with the general supervision and coördination of our war economy, admitted that recent enemy air-attacks had retarded our expanding productive programme, but he denied that those attacks had eaten to any serious extent into our productive capacity. At the same time he did not pretend that we were at the end of our difficulties; on the contrary he warned the House that those difficulties would increase. But Britain's resources and capacity, with the growing help of North America, outmatched the industrial resources and capacity of the enemy. Our increasing productive power, both in quality and weight of output, Mr. Greenwood concluded, would finally crush the might of the dictators.

* * *

Mr. Herbert Morrison, Home Secretary, in a statement of Government policy in regard to the release of interned enemy aliens said that he was taking steps to secure that scientists and experts who were required for work of national importance were released as quickly as possible.

Evidence that the Government are fully aware of the vital importance of safeguarding the food supplies of the nation was given this week in an important announcement by the Minister of Agriculture. Mr. Hudson told the House of Commons it had been decided to guarantee that the present system of fixed prices and an assured market for agricultural products would be maintained for the duration of hostilities, and for at least one year thereafter. Prices will be subject to adjustment to the extent of any substantial changes in cost of production. This decision is intended to secure that stability shall be maintained in the agricultural industry during the war and for long enough after it for a permanent post-war policy for home agriculture to be put into action. It is believed that with this extended guarantee our farmers will respond with energy to the Prime Minister's call for the greatest volume of home food production of which our land is capable.

* * *

An echo of the controversy over the Horder report on air-raid shelters was heard during the debate on the address. Mr. Kenneth Lindsay maintained that the official statements that there was not a report but only a verbal intimation, and that the report could not be published on security grounds, were misleading and called for some further explanation. If the preliminary recommendations—which presumably were written—had been published two months ago, said Mr. Lindsay, they would have given to hundreds of workers in London, apart from borough medical officers of health, some clear lines on which to work. The absence of those recommendations had meant that many voluntary workers and others had not been clear on Government policy. He was amazed to see that the Minister of Health in an interview published in a reputable paper had told the British people that after two months of warfare on the home front there were 50 first-aid medical posts in the shelters. To Mr. Lindsay's personal knowledge voluntary shelter

workers had produced more than 50 first-aid posts during the last six weeks, before these official ones were started. He gave some idea of the scale of the problem by saying that something like 750,000 people still used the air-raid shelters. He urged the Government to do one of two things: either appoint a health commissioner with full plenary powers for London—preferably Lord Horder himself; or make more real the line of organisation between the Ministry of Health and the regional commissioners. If Admiral Evans went round the shelters night after night and reported that the people under Wapping Arches were still experiencing water dripping from the walls, and still had no proper sanitation or light, nothing necessarily happened. It was no good appointing more medical inspectors; what was wanted was action at the periphery, if need be bringing in the Royal Engineers to help with the structural alterations. Mr. Atlee, the Lord Privy Seal, in his reply had not much comfort to give to Mr. Lindsay. He admitted that there was still much to be done in regard to shelters, but claimed from personal knowledge that the work was going actively forward.

QUESTION TIME

American Doctors in England

Sir THOMAS MOORE asked the Home Secretary why American doctors, graduating in Scotland, were not allowed to work in this country instead of priority arrangements being made for them to return to the United States of America.—Mr. O. PEAKE, under-secretary to the Home Office, replied: It would not be in the interests of the British medical profession that all persons of foreign nationality who come to the United Kingdom for a course of study or for the purpose of obtaining a British medical qualification should be free to establish themselves as medical practitioners in this country, and the practice has been to admit such foreign visitors on the understanding that they will leave when they have completed their course of study. It has, however, recently been decided that, in existing circumstances, Americans and nationals of other friendly countries who have obtained a British degree may remain here temporarily and be allowed to take certain appointments such as that of house-surgeon or physician in a hospital or the position of assistant or locum tenens to a British medical practitioner.

Sir T. MOORE: Why should there be any restriction on the services of these qualified trained professional people who are willing to come to our assistance in these times of shortage of medical staff throughout the country?—Mr. PEAKE: There is an embargo on their services in view of a recent change in policy, and I trust that no American doctor has been subjected to any disadvantage in England on account of the fact that he has graduated in Scotland.

Mr. J. J. DAVIDSON: In order to utilise fully the services of these doctors would the Minister consider setting up a separate war-time register?—Mr. PEAKE: That proposal would have to be very carefully considered.

Sir FRANCIS FREMANTLE: Is it not true that American doctors have very varied qualifications many of which are quite inappropriate and unsuitable; others are very good and they ought to be used? Therefore there should be some distinction.—No further answer was given.

Distribution of Milk

Captain L. F. PLUGGE asked the parliamentary secretary to the Ministry of Food whether he was aware that, notwithstanding that the supply of all milk for evaporated milk for the fighting service was no longer available, the liquid milk market was already 70,000 gallons a day short and was expected still further to decline; and what steps he was taking to deal with the shortage.—Major LLOYD GEORGE replied: I am aware that there is at the present time some shortage of milk for liquid consumption, occasioned by a fall in production coincident with a substantially increased demand. The agricultural departments are at present in consultation with representatives of the milk producers discussing the possibilities of increasing the output. The milk-marketing boards are responsible for the equalisation of bulk supplies, so far as is practicable, as between the various consuming areas. By means of voluntary pooling arrangements, the dairymen in those areas in which a shortage exists are giving priority to invalids, mothers and children, and equalising the remaining supplies to individual consumers.

In answer to a further question he added that steps were being taken to import dried milk from Australia and elsewhere to help make up the present shortage of produced milk.

Mr. F. MESSER asked the President of the Board of Education if he could state the consumption of milk in schools in June, 1939, and September, 1940.—Mr. HERWALD RAMSBOTHAM replied: The consumption of milk under the milk-in-schools scheme amounted to 2,689,000 gallons in June, 1939, and to 2,163,000 gallons in June, 1940—the latest month for which figures are available. The number of school days in June this year was two less than in the previous year.

Mr. E. SHINWELL asked the Parliamentary Secretary to the Ministry of Food whether he was aware that the arrangements for the provision of free and cheap milk for school-children in many schools in the county of Durham had broken down; that for many weeks children had had no milk, although ordered by the medical officer to be supplied with it; whether this was due to a shortage of milk or the refusal of distributors to bottle milk because of the extra cost entailed; and what steps he was taking to deal with the position.—Major LLOYD GEORGE replied: I am aware that certain schools in the county of Durham and elsewhere have not been receiving supplies of milk recently under the milk-in-schools scheme. The Minister has recently been in touch with the distributors and he hopes, with their coöperation and the assistance of the milk-marketing boards, to make arrangements for the maintenance of the supply of milk to schools.

Health in Shelters

Mr. K. LINDSAY asked the Home Secretary if he would indicate what were the respective functions of his department and the Ministry of Health in connexion with matters affecting health in public shelters.—Mr. H. MORRISON replied: The Ministry of Home Security is the central department primarily responsible for shelter policy, but the Ministry of Health undertakes responsibility for matters relating specifically to public health. Under this arrangement the Ministry of Health is the executive authority for the appointment of doctors and nurses to attend persons in shelters, medical inspection, and measures to prevent the spread of disease. The Ministry of Home Security is the executive authority for matters arising out of the design and construction of shelters and their fittings. In all matters affecting the public health, whether directly or indirectly, close liaison is maintained between the two departments and circulars or general statements on these matters are not issued by one department without prior consultation with the other.

Mr. O. E. SIMMONDS: What powers are possessed by the police or wardens to enforce the removal from public shelters of persons who are medically certified to be a potential danger to other shelterers?—Mr. MORRISON: A regulation is about to be made which will enable rules governing conduct in shelters to be issued. It is proposed to deal in these rules with the question of persons suffering from infectious or contagious disorders.

Mr. BROOKE: What progress has so far been made in London to carry out the Horder committee's recommendation that, wherever possible men's closets should be placed just outside air-raid shelters and not inside; and are chemical closets to be substituted entirely for open pails when closets are inside shelters?—Mr. MORRISON: Some progress has been made in carrying out this recommendation, where it is practicable to do so, but I am not in a position to give precise details. It is the intention that chemical closets, or in some cases water closets, should be substituted for open pails.

Steel Helmets for Hospital Staffs

Mr. F. MESSER asked the Minister of Health if he was aware that members of the staffs of hospitals, exposed to danger during air-raids, were still unable to obtain steel helmets; and if any action was being taken to deal with the matter.—Mr. M. MACDONALD replied: Issues of steel helmets are being made on the requisition of scheme-making authorities and, in London, on that of the governing bodies of the voluntary hospitals, to all hospital staffs required to work in the open during air-raids. This distribution is approaching completion.

Diphtheria Immunisation in Lincolnshire

Mr. W. LEACH asked the Minister when immunisation against diphtheria was first introduced in the county of Holland, Lincolnshire; what had been the yearly number of children immunised; and what proportion was this of the total child population of the district.—Mr. MACDONALD replied: Immunisation against diphtheria by local authorities

was first introduced into the county of Holland, Lincolnshire, in 1933. The total number of children immunised during the years 1933 to 1939 inclusive was 12,628, giving an average yearly figure of 1804; but I should add that 8962 out of the total of 12,628 were immunised in 1939. It is estimated that about 60% of the present child population of the county of and below school-age are immunised.

Responsibility for Evacuees

In reply to a question Mr. MACDONALD said that the general principles governing the financial adjustments between evacuating and receiving authorities are on the basis that no additional cost should fall on the receiving authority in respect of persons or children received in the area under the Government evacuation scheme. Additional expenditure incurred by the receiving authority is borne by the Exchequer but expenditure which—apart from evacuation would have been borne by the evacuating authority remains the liability of that authority.

Private Houses as Hospitals

Miss T. CAZALET asked the Minister whether he could state the number of private houses which had been acquired for hospitals and convalescent homes in reception areas; the number of these which were at present full; the number partially full; and the number still empty.—Mr. MACDONALD replied: Under the Emergency Hospital Scheme, arrangements are being made by the war organisation of the British Red Cross Society and Order of St. John of Jerusalem to open approximately 200 private houses as auxiliary hospitals. So far only 70 of these are ready to receive patients, approximately 50% of the beds being occupied. A considerable reserve of empty beds must be kept for casualties and sick during the winter months. In addition, 150 houses are being adapted and equipped as annexes to existing hospitals. I have no separate figures showing the present occupancy of these annexes, but they are brought into use as part of the parent hospital as soon as they are open. The majority of the 350 houses will be in reception areas.

Oil Products and Purchase Tax

In reply to a question Sir KINGSLEY WOOD said that olive oil is liable to tax if put up for medicinal, veterinary or toilet use and liquid paraffin is also liable to tax.

Anti-tetanus Inoculation in the Army

In reply to a question the Secretary of State for War said that among the wounded of the B.E.F. there were eight cases of tetanus. Three of these had received prophylactic tetanus antitoxin but none had been previously immunised with tetanus toxoid.

Tannic-acid Treatment for Burns

Mr. E. THURTLE asked the Minister of Health if it was on expert medical advice that his department recommended to all air-raid precautions authorities that tannic acid was the most efficacious treatment for burns, and urged that the necessary stocks should be acquired for such treatment; if it was on the advice of the same experts that the authorities were now being advised that this treatment was unsatisfactory; and if he would say when, and on what grounds, his expert advisers changed their minds.—Mr. MACDONALD replied: The answers to the first and second parts of the question are yes. Experience in the past few months—which in the case of burns has been much wider than it could ever be in peace time or in the last war—has shown that tannic-acid treatment is not satisfactory for certain types of burns. With the coöperation of the Medical Research Council the situation is being watched closely by experts of world-wide reputation.

On Dec. 3 the parliamentary correspondent of the *Times* said that it was estimated that there are 92,000 children of school age still living in the London County Council area, East Ham, and West Ham, of whom only 25,000 are going to school.

In the L.C.C. area there are 23,000 children attending the 365 schools which remain open, but the parents of the other 60,000 children believed to remain, prefer to keep them at home. Schools are also open at West Ham and will shortly reopen at East Ham. During the last few weeks 29,000 children have been evacuated from the L.C.C. area, and the council have now announced that it proposes to make school attendance compulsory for those who remain.

Letters to the Editor

SCARCITY OF OPHTHALMIC DRUGS

SIR,—I feel sure I shall be voicing a complaint which will find support amongst ophthalmic surgeons in this country in drawing attention to the increasing difficulty in obtaining supplies of essential ophthalmic drugs. Hyoscine, which before the war was from 20*s*. to 30*s*. an ounce, now stands at £26 to £30 an ounce. Even at this exorbitant price it is impossible to obtain more than a gramme at a time. As is well known it is an essential drug in the treatment of patients who suffer from atropine irritation, besides being a useful drug for cases requiring a mild mydriatic. Homatropine, in many ways a more essential drug, as it is used so extensively in refraction work, is almost as unobtainable, and has more than trebled in price. Duboisine is almost unobtainable and the only other obtainable mydriatic is cocaine, which is unsuitable for cases of atropine irritation. It is not beyond the powers of the responsible authorities to secure supplies of these drugs, as they are by no means the monopoly of Germany or German-occupied territories. I write this now before it is too late, and before ophthalmic surgeons are reduced to a condition of partial paralysis by starvation of these essential drugs.

Royal Eye Hospital, S.E.1. T. M. TYRRELL.

PROTECTION AGAINST LITIGATION

SIR,—The council of the Medical Defence Union has just approved an important modification of policy to become operative on Jan. 1, 1941, whereby it will not be practicable in future for principals to protect themselves from actual or threatened litigation against them in person arising out of the alleged acts or omissions of their named assistants who are not members of a defence organisation on their own account.

In the past the union accepted this liability where the principals, who were already members, named their assistants and paid an additional subscription of 10*s*. per annum. It is now deemed necessary and desirable that all assistants and locums should be members of a recognised medical defence organisation to acquire full protection on their own behalf as well as joint protection with their employers, provided the employers themselves are members of a reciprocal defence body. Principals should immediately inquire of their assistants whether they are at present members of a medical defence organisation and in benefit, and, if not, they should insist upon the production of evidence of membership at an early date. It is only by taking a precaution of this nature that principals can be protected adequately against the ever-growing litigiousness of patients, private and hospital alike, and of their relatives who are justifiably or unjustifiably dissatisfied with the professional advice or treatment received.

ROBERT FORBES,
Secretary, Medical Defence Union.

Bonnington, Stone Grove, Edgware, Middlesex.

THINGS TO COME

SIR,—I welcome Dr. Aleck Bourne's letter, urging a totally new outlook on health as the guiding principle of the future medical service. But anatomy and physiology, the knowledge of structure and functioning, have surely since Harvey's time been the basis on which knowledge and treatment of disease is taught. The main reform now required is in the teaching and status of anatomy and physiology, which must be extended first to the processes of fatigue, exhaustion, abuse and decay; secondly to treatment of any impairment of structure or function in its earliest stage; thirdly to defence from accident or pathological aggression; and throughout to the life, circumstances and habits of mankind, both in the individual and in the community. On this basis pathology and the science and art of medicine and surgery would be developed in more logical sequence and relation; prevention and application to the community would be essential to the consideration of each disease, even at the bedside; and a course of public health would need only a training, practical and

on paper, in organisation, legislation and administration of the public services. This would, however, mean extensive changes in medical schools and examinations.

But it is one thing to design a picture, another to paint it. There will be "the same opposition to reform," as throughout the age-long history of medicine, not from a minority but from the mass of the profession, both in general practice and in the consultant ranks, not from lack of good will but from lack of vision and from habit. Better the ills you know, say most men, patients and doctors, than those you know not (clearly) of. In Parliament we know how carefully to consult all interests, and to persuade rather than compel the hindmost. Sir Ernest Gr ham-Little—not as he suggests "the only member of the Parliamentary Medical Committee holding consultant status," for Colonel Sinclair was a consultant surgeon and I am a consulting M.O.H.—considers consultants underrated in proposals for medical planning. But Parliament does not believe in proportional representation of interests on advisory bodies. General practitioners, who form the bulk of the profession, are most concerned with any proposed reform and they broadly represent all patients, ailments and conditions of practice. Sir Ernest rightly says that consultants must be watchful of their interests; but consultants must, still more, use their opportunities to lead the profession.

Hatfield, Herts. FRANCIS FREMANTLE.

ANÆSTHESIA IN THE SHOCKED PATIENT

SIR,—In their letter of Nov. 23 Mr. Ruscoe Clarke and Dr. Kessel urge further exploration of the use of local analgesia in the prevention and treatment of wound shock. H. Mahaffey (*Anesth. Analges.* 1939, **18**, 200) reports the results of his investigation into suitable nerve blocking for injuries—e.g., brachial-plexus blocks for extensive injuries of the arm. The results were uniformly disappointing; a further fall in blood-pressure occurred and the procedure was deemed to be unjustifiable.

St. Albans. C. LANGTON HEWER.

TREATMENT OF BURNS

SIR,—We have read with considerable interest your report of the meeting of the Royal Society of Medicine on Nov. 6, and we wish to make some remarks on the treatment of burns based on our observations in H.M. ships and a naval hospital.

Immediate treatment.—In men-of-war facilities for treatment are limited even after an action, and shock can be treated only by general measures and morphia. Plasma and reconstituted-serum transfusions are not always possible, and in hospital ships and hospital carriers are only possible in very limited numbers. In fighting ships treatment is essentially first-aid, and must be simple, easily and rapidly applied, preferably directly to the affected area without cleansing, and as painless as possible. This is best met by using jelly or mucilage preparations containing an antiseptic and analgesic. It is most important that the marginal skin for a considerable distance around should be treated with an antiseptic dye, either "coagulant" preparation or a simple mucilage containing gentian-violet (0·1%) and brill ant green (0·1%). Our bacteriological work on burns from naval casualties has shown that the staphylococcus and not the streptococcus is the prevalent pyogenic organism. Infection occurs mainly from the marginal skin or proximate garment, and much less frequently from the mouth and fauces of the patient or attendants. Infection is minimised by adequate and repeated marginal painting and by dressings covering completely the area involved.

The use of tannic acid.—We consider that tannic acid is an effective method of treatment, if intelligently used. It is easily applied, for example, in 20% strength in a glycerin-jelly base; with this concentration coagulation occurs readily without the use of hair-dryers. Tanning is no small factor in saving the life of the patient where large areas are involved. It can be applied to extensive surfaces, being interrupted by narrow transverse sterile Vaseline strips at joints. The most important factor in this connexion is that the initial tanning should be adequate. Often a 5% tannic-acid solution or compress has been employed and the resulting tanning has been slow and ineffective; cleansing and re-tanning under anæsthesia has then been necessary on the case reaching hospital. Our experience has been different from that of Surgeon Rear-Admiral Wakeley, who found the tan loosened on the eighth or ninth day, leaving a healed scar. Not infrequently in uncomplicated cases the tan has remained for as long as 4 or 5 weeks before separating completely.

Infected cases.—In infected cases, sulphanilamide or sulphapyridine, given by mouth when possible, in doses amounting to 20 g. over a period of 4 days, is most helpful in conjunction with hypertonic sodium sulphate applications. The temperature settles, the area becomes clean, the purulent exudate is diminished considerably and "coccus-free" some days earlier than when similar local measures are adopted but the drug withheld. We have used sulphapyridine and sulphathiazole locally in a few cases of infected wounds, but not in infected burns. If the requisite concentration of these compounds in the blood is obtained and maintained for the time necessary, a similar concentration will be present in the exudations in the infected area; this will be more effective than surface (depot) applications of crystals as such or in suspension, because the solubility of the compounds is relatively slight. Some months ago we saw several infected cases which were cleansed and re-tanned; the majority of these did well, the tan loosening between 2 and 3 weeks later, leaving healed skin. Marginal painting with antiseptic dyes prevented recurrence of sepsis. In some cases in which this was not done infection recurred at the margins; in a few this was slight, and the condition later cleared up after adequate drainage. In others the areas had to be cleansed again and re-tanned. In certain cases the granulating areas were treated with tulle-gras. In these, a certain degree of infection occurred and fairly frequent changing of dressings was necessary. This was a painful procedure, and required repeated Pentothal anæsthesia. The pus accumulated in the meshes of the tulle-gras. The most severe of these cases were cleansed and re-tanned, silver nitrate being used as the antiseptic; these later did well. In all of these cases the organism recovered was *Staphylococcus pyogenes aureus*. A number had been treated with cod-liver oil and these readily became infected. *Bacillus pyocyaneus* and *B. proteus* were commonly found in addition, and these were responsible for much unpleasantness. Despite this combined infection, however, with no other measure than exposure to the air, and repeated changing of the topmost dressings, the exudation dried up and the infection was self-terminated. The dry pus-encrusted dressings which had acted as a tan separated and left good, well-healed, scar-free areas.

Following the report by Russell and Falconer on the buffered isotonic proflavine-sulphate solution to be used in head injuries, we prepared this solution, added urea (5%) and incorporated it in a base similar to that of the B.P. acriflavine emulsion, but with the composition of the base so arranged as to permit of the ready diffusion of the water phase; 30% of the antiseptic dye was available in a period of 24 hours when tested against plasma and serum under standard conditions. This was applied to the granulating areas of infected burns after removal of the tan and treatment with hypertonic sodium-sulphate solutions. The emulsion dressing was left undisturbed for 8 days, when it was renewed. Occasional exuberant granulations were "burned" with blue-stone and the dressing reapplied. Reinfection with pyogenic cocci did not occur in cases so treated—*B. pyocyaneus* was the only organism occasionally recovered, but this did not appear to interfere with the rate of repair. In a series of cases so treated we have had very good results. The granulating areas were measured and the rate of healing established. The best results were obtained in relatively superficial burns which had become infected and were granulating; the rate was remarkable, and in one case previously healing very slowly an area the size of a sheet of foolscap paper healed in 14 days (5 sq. mm. per mm. circumference per day). The average rate in all cases has been less, the slowest being about a tenth as fast. This occlusive emollient dressing yields an adequate amount of bland, effective antiseptic in an ideal, buffered isotonic solution. It is painless and easy to remove and

apply; it can replace re-tanning and allows fairly free movements of joints. The healed skin is in good condition, and as far as we are aware no keloids have been noted in our cases (earliest treated 8 months ago).

We have not had an opportunity of seeing cases treated by saline baths or tulle-gras and saline packs prior to grafting, as described by Mr. McIndoe. We judge that this treatment cannot be generally applicable, demanding as it does considerable trained team-work and the facilities of a well-appointed hospital. The irrigation method using the Bunyan-Stannard oiled-silk envelopes appears to offer results which outweigh the additional facilities required. We consider, however, that the simpler application of hypertonic sodium-sulphate solution, either as such or in a loose oil-water emulsion, with or without the later application of a buffered isotonic proflavine-urea emulsion will render most infected burned areas (third degree) clean and suitable for grafting. In infected second-degree burns the results with this treatment have been consistently good. Cases previously showing slow repair have healed fairly rapidly. We hope to publish some of our results shortly.

J. F. HEGGIE,
Aberdeen. R. M. HEGGIE.

THE PHYSICS OF BLAST

SIR,—As a Londoner I consider that the longitudinal nature of blast-waves is overemphasised; also that any comparison with the sea should surely be made with its bottom rather than its surface. Sandbag walls in front of doors or along area railings may protect from splinters, but will not prevent the doors or basement windows being blown in by blast. Again, the effect of blast on buildings may be to lift the floors rather than to displace the walls. To protect a basement window looking on to an area, the area itself must be filled with sandbags.

London, W.8. N. G. HULBERT.

TOO MUCH VENTILATION

SIR,—In your note on the advice given by the War Office on the management of cerebrospinal fever (Nov. 9, p. 608) you mention that "In particular, medical officers are advised to make sure that whenever rooms are vacated maximum ventilation is obtained." Although this advice is in theory wise, in the coming weeks of wet cold are we not going to be between the Scylla of spray infection and the Charybdis of the contamination of bedding, and especially mattresses, by cold water vapour? After a careful study of the article on the influenza epidemic of January–March, 1939, by Stuart-Harris, Wilson Smith and Andrewes in your issue of Feb. 3 (p. 205) I cannot escape the conclusion that the outbreaks of clinical influenza in schools and barracks which they detailed—they were of explosive origin, yet yielded no virus, and arose 7 days after reassembly following the Christmas holiday—were due to a reaction to "maximum ventilation" itself, and its effects on bedding—doubtless well aired daily during the absence of the occupants. This conclusion receives support from clinical observations in general practice.

Air saturated with moisture and at a temperature of 33°–40° F. may well be irritant to the bronchial mucosa; asthmatics and bronchitics certainly find it so. The symptoms in cases of influenza at the naval barracks at Chatham in 1939 are thus described: "... flushed moist pharynx without exudate, and a persistent irritating barking cough, accompanied by substernal pain, were observed. There were a few cases of severe laryngitis." Against this let me quote from my case-notes. "Lung, 2–3 hours: voice husky, aphonia, cough, pains in chest." My note, however, does not refer to influenza but to the effect of air containing one part of mustard-gas (H) vapour per million acting on the lungs for an hour, and was made at an anti-gas school two years ago. I suggest that unwarmed air in wet, cold weather has something of the same effect. Physicians of the old school knew this well and forbade the young to breathe winter night air. In the England of Dickens, moreover, they had plenty of cheap fuel, warm clothing and strong cordials which we in the England of Priestley lack.

Rochester. A. J. COPELAND.

IMPROVEMENT IN THE MEDICAL SERVICES

SIR,—Before I go into the Army next week and for ever after hold my peace (at least until the war is over) I should like to correct one of Sir Ernest Graham-Little's shrill denunciations of the British Medical Association. So far as London is concerned, the "panicky measures regarding the E.M.S. taken by the Ministry of Health at the outbreak of war" were due to the advice of the sector officers as a body, for it was they and not the Central Emergency Committee of the B.M.A.—indeed the latter committee quite definitely advised against the course—that insisted on consultants being called up for full-time service in E.M.S. hospitals. In the provinces, except for a few whole-time officers, consultants were from the beginning on part-time service with the E.M.S., and in Scotland, where the first air-raids actually occurred, engagements were on a sessional basis, which allowed them to carry on their hospital work, teaching and private practice without interruption. I realise that the sector officers had every right to expect the blitzkrieg on London in September, 1939, instead of having to wait until September, 1940 (when my own contract with the E.M.S., along with others, was terminated by the far-seeing Ministry of Health), and the action they took at the beginning of the war was in intelligent anticipation of intensive bombing. But if Sir Ernest must blame someone for the "panicky measures" he must blame the sector officers—chosen with care before the war by the great teaching hospitals of London, from the ranks of the consultants, for their potential administrative abilities—and not the B.M.A. committee, which was and is unusually representative of all sections of the medical profession and by no means restricted to B.M.A. members.

Harley Street, W.1. R. SCOTT STEVENSON.

RADON SUPPLIES—A REQUEST

SIR,—Owing to increasing hazard in the daily use of radium, there is a big demand for radon. The radon centre at Barton, Beds, which was started a year ago has been working to capacity, although there has been a recent addition to its supply; despite this the medical demand is more than we can at the moment cope with. Plans are being discussed as to the best way of serving these medical needs in the future and it would be of great assistance if those who have to use radon would send me word during the next few days what are likely to be their future requirements per week.

Middlesex Hospital, W.1. SIDNEY RUSS.

PNEUMOTHORAX AND STAPHYLOCOCCAL SEPTICÆMIA

SIR,—In view of the scantiness of reported instances encountered by Mr. Butler and Dr. Perry (*Lancet*, Nov. 16, p. 619) I should like to record another example of pneumothorax complicating staphylococcal septicæmia.

A child of 7 was admitted to hospital with mastoiditis. Schwartze's operation was performed and an extradural abscess drained. Repeated rigors followed. The left lateral sinus was explored, and though it contained no clot a blood-culture was positive. Metastatic abscesses developed despite ligature of the internal jugular vein, and two further blood-cultures both yielded *Staph. aureus*. In the fifth week a left-sided empyema formed and the patient began to succumb slowly to the toxæmia; death occurred suddenly a few days later, and was found post mortem to be due to a large right pneumothorax. The autopsy demonstrated in addition the following points.

The left internal jugular vein contained clot which extended upwards into the sigmoid sinus and downwards through the innominate vein into the superior vena cava. Both lungs contained many septic infarcts, some of which were breaking down; on the left side they had given rise to the empyema, and on the right side to the pneumothorax. There were in addition other metastatic abscesses.

Pathologically, it might be expected that pneumothoraxes would result not infrequently in cases of multiple lung abscesses, for it is not difficult to imagine how a breaking down infarct may simultaneously involve a bronchiole and visceral pleura, despite the surrounding consolidation of the lung and the pleural reaction. One

must suppose that these two processes effectually prevent the establishment of a communication between bronchioles and pleura in most cases since pneumothorax, apparently, is but rarely met with under these circumstances.

I am indebted to Mr. N. A. Jory for permission to record this case.

Stoke Mandeville, Bucks. C. J. LONGLAND.

MISUSE OF TANNIC ACID

SIR,—It would be interesting to know what has suddenly happened that has brought tannic acid as a treatment for burns into a front line for attack. I have used this method both in hospital and private practice, for many years, in fact ever since it first came into vogue and have nothing but praise for the results obtained. It has helped to relieve shock, diminish surface loss of fluids, and provided ordinary principles are adopted, such as rest and skin grafting, I see no reason for contractures to occur. I am less fortunate than many, because I am not serving with any of the fighting forces and so have had no opportunity of seeing the class of burn that the present war has produced, especially in the Navy and Air Force; but I have read the discussion that has recently taken place at the Royal Society of Medicine together with most, if not all, the articles that have been published and I note that even though gentian violet or some such dye is often recommended, with or without silver nitrate, in many instances tannic acid has been added in some form or other. Is it not likely that the crippling end-results in fingers are due rather to the severity of the burn caused by the combination of petrol and high explosive than to the application of tannic acid and that provided the tanning is confined to the anterior and posterior surfaces of the fingers, no such crippling effects of the hands should ever occur?

Welshpool. H. G. PINKER.

OLD-FASHIONED DRUGS

SIR,—A note in *Science* of Oct. 25 (p. 373) calls attention to the fact that important changes in medical prescribing in Great Britain are recommended by an official medical committee. Among the drugs said to be "in frequent use," and which are now hard to obtain, are balsam of tolu, buchu leaves, calumba root, black catechu, gelsemium root, jalap and senega root. Many American physicians will no doubt wonder why such antique galenicals and other proprietary medicines are still used by our British colleagues after we have long since abandoned them as lacking in useful pharmacologic effects. It would seem to some of us that if the present war has no other good effects it may at least serve to discard much outmoded therapeusis.

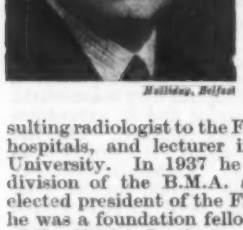
Jefferson Hospital, Philadelphia. HOBART A. REIMANN.

Obituary

ROBERT MAITLAND BEATH

B.A. R.U.I., M.B. BELF. AND LOND., F.F.R.

Dr. R. M. Beath, who died on Nov. 21 at the age of 54, was the son of Mr. Robert Beath of Belfast and was educated there in the Royal Academical Institution and the Queen's University. In 1914 he qualified in medicine, taking first place in the examination, and five years later he obtained the degrees of M.B., B.S. of London University. In the meantime he served with distinction in the last war, retiring with the rank of major. Always interested in physics, he had some radiological experience during the war and continued its study with enthusiasm after demobilisation. His first hospital appointment was as radiologist to the Ulster Hospital for Children and Women and soon afterwards he joined the honorary staff of the Royal Victoria Hospital. Later he became radiologist to the Belfast Infirmary, consulting radiologist to the Forster Green and County Mental hospitals, and lecturer in dental radiology in Queen's University. In 1937 he was chairman of the Belfast division of the B.M.A. and in the following year was elected president of the Faculty of Radiologists, of which he was a foundation fellow; he was also on the council of the British Institute of Radiology. In an extensive private practice he had as partner, since 1924, Dr. Frank Montgomery. He is survived by his widow, daughter of the late Mr. R. M. Young, M.R.I.A., of Belfast, and by four daughters.



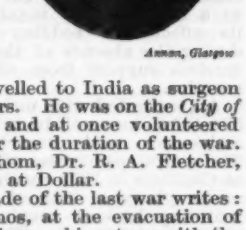
Halliday, Belfast

Beath's untimely death, after an illness of a few weeks' duration, has caused widespread sorrow which is not confined to medical circles in Belfast and Ulster. To few men is it given to enjoy so fully the affection and esteem of others. Those who have availed themselves of his help and skill know best how kind he was, how quickly understanding and how gentle. While he never sought office or preferment, his wisdom, patience and consideration for others made them instinctively choose him for positions of honour and trust. In his travels in America and on the continent of Europe he made friends in many countries and nothing gave him greater pleasure than to entertain them in his home. He was an enthusiastic Queensman, interested in every aspect of his university's activities. An original member of its O.T.C., he was, at the time of his death, president of its Services club, and a past master of its masonic lodge. It is, perhaps, only now that he has gone that those who knew him realise to what extent they had come to depend on his wise counsel and unfailing friendship. R. M.

DUNCAN FLETCHER

L.R.C.P.E., D.P.H.

WHEN the *City of Benares* with many children aboard, was torpedoed in mid-Atlantic on Sept. 17, Dr. Fletcher was amongst those who lost their lives. He was a native of the West Highlands, and after qualifying in 1895 most of his work was done there as chief district medical officer for the Islands and Western Inverness county. In 1915 he joined the R.A.M.C. and saw service in Egypt, Gallipoli, and France with the 29th division. He also served at Murthly War Hospital and Ralston War Hospital and as medical superintendent at the Grove Neurological Hospital, Dumfries. He retired in 1919 with the rank of lieutenant-colonel. In 1920 he returned to general practice at Kinross, and four years later settled at Dollar. He went abroad after a severe illness in 1936, and each winter since then he travelled to India as surgeon on one of the City Line steamers. He was on the *City of Benares* when war broke out, and at once volunteered to join the Merchant Navy for the duration of the war. He leaves two sons, one of whom, Dr. R. A. Fletcher, continues his father's practice at Dollar.



Annan, Glasgow

Dr. R. R. Macnicol, a comrade of the last war writes: It was in the Island of Lemnos, at the evacuation of Gallipoli, that I first met Fletcher on his return with the 29th division and found him serving in the very field ambulance to which I had been posted. From that moment till the end of the war I had opportunity of observing his many fine qualities. A strong unassuming character, a fearless devotion to duty, proved themselves in the rigors of the Somme and the Ypres front. Fletcher was always the same placid humorous comrade. An ardent Celt, he was steeped in the lore, the poetry and the music of the Gael, and I cherish memories of his tales, anecdotes and songs which whiled away our waiting hours. I am proud to have been numbered among the friends of that kindly Highland gentleman who died at his post at the hands of the old enemy, and I take leave to place another stone on his cairn.

Medical News

University of Wales

At recent degree examinations in obstetrics and gynæcology at the Welsh National School of Medicine the following were successful: G. B. Downs, Eirian Spickett, and G. A. Wright.

Royal College of Nursing

At a meeting of the council of the College on Nov. 21 it was announced that as a practical expression of their concern at the inadequacy of the present shelter services, and in an attempt to overcome the sense of frustration left by visits to authorities, the public-health section of the college had offered to staff two tube-stations in the centre of London. The offer has been accepted by the medical officer of health concerned, and the nurses, who will give their services free, will enter on their duties without delay. Meanwhile the college urgently appeals for more public-health nurses to volunteer for the work at Civil Nursing Reserve rates.

The new short-term war courses for industrial nurses start at the College early in January. These industrial nurses are to be trained as quickly as possible in batches of 30, the Government paying the fees and providing maintenance grants and, in some cases, travelling expenses. In view of the lack of provision for dealing with the great influx of working population to rural areas and the unwillingness of the workers to sacrifice time and pay seeking treatment, the college is urging the establishment of additional medical facilities, supplemented by mobile clinics. The college, while supporting the Midwives Institute's recommendation that women in factories should cease work for four weeks before and eight weeks after the birth of a child, secured approval for the additional recommendation that these weeks should rank for National Health Insurance benefit, without which few women would be induced to forgo their wages.

Medical Casualties

The following casualties in the R.A.M.C. are announced:—

Prisoner of war.—W. S. Captain N. D. Allan, M.B. Aberd.; W.S. Captain S. G. Cowper, M.R.C.S.; Lieutenant B. J. Harries, M.R.C.S.; Lieutenant W. C. Harris, M.B. Glasg.; A Major C. W. A. Kimbell, F.R.C.S.E.; Lieutenant R. Mackay; Lieutenant Alexander Mcnab, M.B. Glasg.; Lieutenant R. D. Monteith, M.B. Aberd.; Lieutenant J. H. Mullican, M.B. Aberd.; T. Captain G. S. Trower, M.B. Camb.; Major E. R. C. Walker, M.B. Edin.

The discussion on Active Immunisation at the Section of Therapeutics of the Royal Society of Medicine arranged for Tuesday, Dec. 10th, at 2.30 P.M. has been postponed until Tuesday, Jan. 14th. On Wednesday, Dec. 11th, at 2 P.M., Mr. W. B. Gabriel will give his presidential address to the Section of Proctology. He will speak on Squamous-celled Carcinoma of the Anus and Anal Canal.

At the fifth annual general meeting of the Ethical Pharmaceuticals Association on Nov. 26, Mr. A. W. Edwards, the chairman, commented on the purchase tax. He deprecated the narrow list of essential drugs of exceptionally costly nature and expressed surprise that sales to hospitals were not exempted from the tax.

The following officers were elected for 1940–41: chairman, Mr. A. W. Edwards; vice-chairman, Mr. H. R. Napp; hon. treasurer, Mr. J. C. Gordon; secretary, Mr. F. G. W. Paige; members of executive committee, Mr. J. Angus (Bengue and Co.), Mr. W. Beckley (Chas. Zimmermann and Co.), Mr. A. C. Henry (Bayer Products), Mr. E. H. Spicer (Endocrines-Spicer), and Mr. C. W. S. Taylor (Ciba).

At a meeting of the Pharmaceutical Society on Dec. 11 at 2.30 P.M., at 17, Bloomsbury Square, London, W.C.1, Mr. A. L. Bacharach, F.I.C., will speak on some nutritional problems of war and peace.

Lectures and practical courses of instruction for a diploma in psychological medicine will be held in connexion with the Maudsley Hospital at the beginning of 1941. Attention will be given to the social aspects of psychiatry and to war-time problems. Further particulars may be had from Prof. S. Nevin, hon. director of the medical school, Central Pathological Laboratory, West Park Hospital, Epsom, Surrey. Applications for admission to the course should be sent to him before Dec. 16.

The Minister of Health has issued a circular to county nursing associations and district nursing associations asking if they will help to look after munition workers and others engaged in work of national importance who have been transferred from their own homes. These workers will mostly be living in billets and lodgings and when they fall ill the skilled services of a district nurse may well be essential. It is suggested that when a worker is absent on account of ill health his factory should notify the nursing association. The Minister will pay not more than 9*d.* for each visit made by a nurse, and the workers will not be required to make any payment though it is hoped that they will contribute what they can towards the expenses of the nursing association.

Sir Cuthbert Wallace, Mr. E. Rock Carling, Mr. G. R. Girdlestone, and Sir Frank Colyer have been appointed honorary consultants to the Ministry of Pensions.

Dr. W. Russell Thomas (Liberal National) has been returned unopposed as member of parliament for Southampton in the by-election caused by the elevation of Sir John Reith to the peerage.

The O.B.E. has been awarded for good services with the Somaliland force to Surgeon Lieut.-Commander W. M. Macgregor, M.B. Camb., R.N.V.R.

Infectious Disease in England and Wales

DURING THE WEEK ENDED NOV. 2, 1940

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1789; whooping-cough, 1740; diphtheria, 1282; enteric fever, 28; measles (excluding rubella) 12,572; pneumonia (primary or influenzal), 572; puerperal pyrexia, 120; cerebrospinal fever, 132; poliomyelitis, 34; polio-encephalitis, 5; encephalitis lethargica, 3; dysentery, 81; ophthalmia neonatorum, 76. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Nov. 8 was 1557, including: scarlet fever, 284; diphtheria, 255; measles, 464; whooping-cough, 45; enteritis, 45; chicken-pox, 192; erysipelas, 41; mumps, 21; poliomyelitis, 1; dysentery, 3; cerebrospinal fever, 22; puerperal sepsis, 8; enteric fevers, 13; other diseases (non-infectious), 72; not yet diagnosed, 87.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 2 (0) from enteric fever, 2 (0) from scarlet fever, 14 (2) from whooping-cough, 25 (9) from measles, 33 (1) from diphtheria, 43 (6) from diarrhœa and enteritis under 2 years, and 20 (4) from influenza. The figures in parentheses are those for London itself.

At Liverpool there were 17 deaths from measles, 6 from diphtheria, and 9 from diarrhœa. Birmingham reported 4 deaths from whooping-cough and 3 from diphtheria.

The number of stillbirths notified during the week was 219 (corresponding to a rate of 44 per thousand total births), including 24 in London.

Births, Marriages and Deaths

BIRTHS

BARLOW.—On Nov. 25, at Crapstone, Yelverton, the wife of Surgeon Commander Noel Barlow, R.N.—a daughter.

GASTER.—On Nov. 25, at Milton Abbas, Dorset, the wife of Dr. M. R. Gaster—a son.

MITCHELL.—On Nov. 25, at Gerrards Cross, Bucks, the wife of Dr. S. D. Mitchell—a daughter.

MELLER.—On Nov. 30, at Prestbury, Cheshire, the wife of Captain H. K. Meller, R.A.M.C.—a son.

ROBINSON.—On Nov. 25, at Sydney, Australia, the wife of Dr. Allan Robinson, of Slough, Bucks—a son.

STEPHENS.—On Nov. 30, at Gwelo, S. Rhodesia, the wife of Dr. T. W. Stephens—a son.

MARRIAGES

TARGETT—HILLMAN.—On Nov. 20, at St. Andrews, Ham Common, Surrey, Walter Kendell Targett, M.R.C.S., to Eveline Hillman.

DEATHS

BOX.—On Nov. 27, at Scaynes Hill, Sussex, Stanley Longhurst Box, M.D. Lond., aged 68.

COWIE.—On Nov. 25, at Woodmancote, Sussex, Charles George Cowie, M.D. Aberd.

GAYER.—On Nov. 29, at Tetbury Hospital, Reginald Courtenay Gayer, M.R.C.S., of Hans Crescent, S.W.1.

HAVILAND.—On Nov. 30, Frank Papillon Haviland, M.D. Camb., M.R.C.P., of St. Leonards-on-Sea.

LOCK.—On Nov. 29, John Lewis Lock, M.B. Camb., of Chiswick.

TOWNSEND.—On Nov. 29, at Hammersmith, Meredith Milton Townsend, L.R.C.P.E.

WEBSTER.—On Dec. 1, in London, William Leckie Webster, M.B. Edin., Colonel, late R.A.M.C.

Notes, Comments and Abstracts

NURSES' VIEW OF THE NURSE ANÆSTHETIST

THE council of the Royal College of Nursing, having sought the opinion of the various professional bodies interested, has agreed not to support the policy of training nurses as anæsthetists. They are of the opinion that the administration of anæsthetics should be regarded as a special branch of medicine and should be left in the hands of the medical profession. The council associate themselves with the opinion of Prof. R. R. Macintosh, who agrees that an intelligent nurse can become technically very skilful in the administration of anæsthetics, as is in fact the case in America, where anæsthetics are regularly administered by nurses under medical supervision, but he is emphatic that only the specialist proper has a training broad enough to deal with all the diverse types of modern anæsthesia, and to control unexpected complications. The council were further strengthened in their contention by the fact that there is no dearth of men or women medical anæsthetists in this country. On the other hand, however, they felt bound to take the following facts into consideration: Nurses in this country have to take some sort of course in anæsthetics to prepare themselves for the mission-field; midwives are now allowed to give anæsthetics under medical supervision with strict safeguards; there are innumerable occasions in war-time when the nurse must assist the doctor by giving the anæsthetic when he is operating on a casualty single-handed. To meet such needs and to regularise training in the mere administration of anæsthetics, the college recommend that suitable courses of training should be available for nurses who were required to administer anæsthetics under medical supervision in an emergency. Such courses, however, would in no way qualify nurses as anæsthetists, since the actual choice of anæsthetic would depend on the patient's physical state and would be determined by the medical man in charge.

TREATMENT OF BURNS

AT a meeting of the Shaftesbury Military Hospital Medical Society on Nov. 5, with Major-General F. Casement in the chair, a discussion on the treatment of burns was opened by Brigadier P. H. Mitchiner. Deaths were due, he said, to shock, sepsis, and delayed shock. Despite the views of Professor Wilson of Edinburgh he did not believe that delayed shock was a great danger, but perhaps this was because tannic acid was used in weaker solutions south of the border. Transfusions should be given when practicable; otherwise simple and effective treatment consisted in keeping the patient warm, giving him morphia and resting him for half an hour before moving him. All cases should be given sulphanilamide by mouth from the beginning. It was important, indeed necessary, to keep a skilled team for the treatment of burns, and not to let them be at the mercy of all and sundry. The patient should be anæsthetised before treatment; morphia in large doses was preferable to inhalants as the lungs were usually irritated by smoke. The burned area and six inches of surrounding skin should be cleaned, the blebs should be removed and a coagulating solution applied. He preferred 2% tannic acid but 1% gentian violet was probably equally good. It had recently been stated that tannic acid was liable to produce contractures of the fingers, but he thought that in many cases these resulted from necrosis due to the burn, in view of the fact that it was only reported after severe burns. He had not seen necrosis as a result of tannic acid properly and judiciously applied.

Major W. J. O'Donovan had had much experience of post-mortem examinations in cases of burns and said that considerable medico-legal knowledge was required to establish identity from charred remains, especially when many had been killed by factory explosions, particularly those occurring in T.N.T. factories. In solitary cases it was always possible that death might have been due to some other cause, possibly criminal. He had seen burns from a celluloid comb set alight by a hairdresser's drying hood, an ultraviolet-light burn from a lamp used in photography, and burns of the hands from perhydrol. He described cases of dermatitis artefacta in soldiers, one being a buttock repeatedly blistered by sitting on a hot-water pipe, the other a burnt forearm achieved by bandaging on ha'pennies dipped in muriatic acid. He had treated the second case by putting the other hand up in plaster-of-paris.

Dr. Janet Vaughan had been impressed by the mortality from burns in the air-raid cases she had visited with a blood-transfusion unit. In many cases she had been able to get there within 1–2 hours, and thought that with a well-organised unit blood transfusion was a practicable first-aid measure under civilian conditions. Cases to which the unit was not called for 12–24 hours were those which did badly. Burns were the only air-raid casualties in which hæmoconcentration developed, apart from a few cases of traumatic œdema. Blood was more useful than saline but not as good as plasma; but she advised giving plasma for 24 hours only; after that time it might cause œdema. Moreover, a small amount of Merthiolate was added to plasma during its preparation to prevent it becoming infected, and presumably it was not wise to give more mercury than necessary to cases already liable to renal damage. After 24 hours, concentrated serum could be given, and after 72 hours no further transfusions were needed if the case had been properly tanned; but as long as the burned area was oozing transfusion should continue. If only one vein was available a cannula should be tied into it; this ensured control of the fluid intake and made it possible to give glucose continuously. She too laid emphasis on the value of team work, and summarised recent advances in the treatment of burns as immediate and maintained transfusion, and the use of sulphonamides before the onset of infection.

URINE SPECIMENS FROM FEMALE INFANTS

NURSES waste much valuable time in trying to collect specimens of urine from young infants, especially when these are girls. Robert Cohen and M. L. Blatt (*Amer. J. dis. Child.* October, 1940, p. 897) have devised a simple apparatus which the child can wear comfortably, and which can be applied easily by the nurse, doctor or even the lay parent. The collector is made wholly of rubber and consists essentially of a funnel fitting over the vulva and narrowing below to a tube which can be stretched over an ordinary test-tube. The brim of the funnel has a curved ridge or partition along its posterior edge, from which a flat rubber button projects over the perineum; the partition and button together prevent urine from dribbling out or fæces from working into the funnel and contaminating the specimen. The collector is held in place by three rubber straps—one in front and two behind—which are fastened by safety-pins to the child's vest. The rubber is soft and comfortable and causes no irritation; the collector can be left in position until the child urinates and when removed can be sterilised by boiling. It has been given thorough trial in several pædiatric centres and can be used equally successfully on infant boys.

The Minister of Health has sent a circular to sanitary authorities reminding them that one of the commonest causes of the spread of enteric disease is the contamination of food. Everyone engaged in the preparation of food, and especially employees in bakeries and dairies, should therefore carry out the elementary precautions laid down by law. They are required to keep their persons and clothing clean and facilities must be provided for them to wash their hands before beginning their work and after every act of voidance. Persons engaged in these trades, who are found to be suffering from an enteric fever or to be carriers, are of course suspended from their employment.

The Harveian lecture for 1941 will be delivered to the Harveian Society of London by Dr. John Taylor in March. The subject of the lecture will be the coroner, the doctor, and the public.

Appointments

BURTON, J. A. G., M.B. Glasg., F.R.C.S.E., F.R.F.P.S.: medical referee under the Workmen's Compensation Act, 1925, for Glasgow, Lanark, Hamilton, and Airdrie.

DINGLE, PHILLIS, M.D. Lpool, D.R.C.O.G.: asst. M.O. (obstetrical) at the Redhill County Hospital, Surrey.

MACGREGOR, J. F., L.R.C.P.E., D.P.H.: temp. T.O. for Surrey.

ROWBOTHAM, G. F., B.Sc. Manc., F.R.C.S.: neurological surgeon to the Newcastle-on-Tyne General Hospital.